

"The most essential part of a student's instruction is obtained at the bedside. Nothing seen there is lost; the rhythms of disease are learned by frequent repetition; its unforeseen occurrences stamp themselves indelibly in the memory."

— O. W. HOLMES, "Scholastic and Bedside Teaching."

E. J. BUSHER.

Medical Essays, 1867.

June, 1936.

Pattison Prize in Clinical Surgery



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P R E F A C E.

The Clerking of Surgical Cases has a definite place in the training, in the subject of Clinical Surgery. In this duty the student has the opportunity to investigate his assigned cases to his own satisfaction, and briefly to record and comment on the results of his investigation.

The following Six Cases are chosen from a series of seven cases which were taken in Wards 11 and 12 during the Winter Session 1934-35. They conform to no prescribed scheme, being taken before the present "Method of Case Taking" for Surgical Cases had been put into effect, and are presented in their original form.

The following Case records are primarily of diseased individuals rather than of the diseases which they demonstrate, and the procedure of their study may be said to lie mainly in bedside investigation. In all cases, as far as circumstances allow, pre-operative examination, with daily observation, is the rule, operation is attended, and the patient is observed and the local condition examined from day to day, and the effects of treatment noted. In the records of cases, many details of little importance are necessarily omitted.

The system of case-taking as used in the class of Morbid Anatomy /

Anatomy is re-applied to clinical material, but whereas pathological material was described, and the findings correlated with the Clinical History, in these cases the diseased patient is described, and the findings correlated with the underlying Pathology. Every clinical surgical subject has an associated pathology, and clinical surgery is inseparable from Pathology. On an understanding of the underlying pathology in each individual case rests the whole question of surgical procedure. This pathology as Professor J. Macewen* has said, "is not the "dead pathology of the post-mortem room, but the living pathology of our bodies, and the cells of which they are composed, "in their efforts to ward off, and repair the damage caused by, "injury and disease." In these Case Reports, the underlying pathology is kept in mind, and, where possible, the Commentary attempts to correlate the disease manifestations and the pathology, although in some cases the pathology can only be estimated by clinical methods of examination.

It is doubtful if any disease, including inflammations and injuries, can be regarded strictly from the surgical aspect, as every disease can be regarded from the medical standpoint, either in aetiology or treatment. In all cases a systematic medical examination was carried out, and the importance of previous disease and family history are stressed.

These //

*Introduction, "Text Book of Surgery."

These cases represent a variety of diseases and deformities, as met with in the course of general surgical practice. In their discussion, particularly in differential diagnosis, other similar cases and conditions are discussed and recorded, and this in itself makes the taking of Surgical Cases of general value.

Certain of the Cases have been observed periodically, as they have reported at the Wards, during a period up to 18 months from the date of their admission, when the cases were originally studied. Progress notes are thus appended. A follow-up of a case is of the utmost value. A disease process is only partly observed during the patient's stay in hospital, and future observation leads to an estimation of the morbid process at work, and demonstrates the effect of treatment.

The Cases, as originally submitted, were accompanied by a series of illustrations dealing with the clinical findings, or indicating procedures diagrammatically. Diagrams of stages in operations were made during the course of the operations, and those of the pathological material, especially of the tissue sections were drawn from the specimens or slides. They were intended as illustrations of matter referred to in the text of the case records. A true conception of the tissues mentioned /

mentioned, however, is only to be obtained by an examination of the whole of a slide, and not of the appearance in a short series of microscope fields. The original diagrams have been reproduced, and short explanatory notes added.

While Surgical-Case-Taking may now be followed on prescribed methods, this series of cases was submitted as emphasising the important bearing of the taking of Morbid Anatomy Cases in relation to a later study of clinical material and clinical clerking, and more particularly of Pathology in relation to Clinical Surgery. That Clinical Pathology forms the basis of Surgery was strongly urged by a past generation of Surgeons. The relation between the two studies can, with practical results, be fostered and strengthened.

In conclusion, my thanks are due to Mr. G. L. Chiene for his kind permission to report the following Six Cases.

Patient's Name: Mrs. Mary McGovern.

Address: 3, James Court, Leamarket, Edinburgh.

Age: 57 Years.

Occupation: Housewife.

Medical Attendant: Dr. Shaw,
33, Inchfield Terrace,

C A S E I.

Admitted to Ward 11. 25/ 3/34

Examined: 3/10/34.

MRS. MARY McGOVERN.

Complaint is mainly, at present, of a large swelling on the Right side of the Neck, which is causing some pain, and general uneasiness.

THYROID CARCINOMA.

Case-History: The swelling in the neck was first noticed 4 years ago. The patient herself first noted the abnormality when looking in a mirror. There was a slight localized swelling noticed under the lower jaw, and this, on being felt, proved to be of a hard consistence.

The condition was entirely painless, originally, and the swelling, once established, persisted, was consistently hard, and never showed evidence of breaking down, or softening, or of temporary disappearance.

Definite changes occurred locally, in that the swelling slowly and progressively increased in size, and became irregular, variable in its consistence, certain areas in the general /

Patients Name: Mrs. Mary McGovern.

Address: 6, James Court, Lawnmarket, Edinburgh.

Age: 57 Years.

Occupation: Housewife.

Medical Attendant: Dr. Shaw,
53, Inchfield Terrace,
Portobello.

Admitted to Ward 11. 26/ 9/34

Examined: 3/10/34.

Complaint is mainly, at present, of a large swelling on the Right side of the Neck, which is causing some pain, and general uneasiness.

Case-History: The swelling in the neck was first noticed 4 years ago. The patient herself first noted the abnormality when looking in a mirror. There was a slight localised swelling noticed under the lower jaw, and this, on being felt, proved to be of a hard consistence.

The condition was entirely painless, originally, and the swelling, once established, persisted, was consistently hard, and never showed evidence of breaking down, or softening, or of temporary disappearance.

Definite changes occurred locally, in that the swelling slowly and progressively increased in size, and became irregular, variable in its consistence, certain areas in the general /

general swelling being hard and lumpy to the touch.

This state of affairs continued until November last, i.e., for three years. At this time - eleven months ago - medical advice was sought as at this time there was considerable increase in the size of the swelling, and the swelling also began, for the first time in the history of the case, to be painful.

Her doctor, at that time, noted the oedematous condition of the neck, and suggested Lymphadenoma as the cause, although there were no other swellings present. On her doctor's recommendation she was sent to hospital and admitted to Ward 11. She was sent up from the Surgical Out-Patient Department on account of a swelling in the Posterior Cervical Region and over the Parotid. She had attended the Out-Patient department on two previous occasions, once in 1930, and again in 1932. On the previous occasions she had been sent to the Ear, Nose & Throat Department, in the first place on account of a swelling behind the left auricle, and secondly on account of the development of a mass of cervical glands.

As there was doubt as to the nature of the glandular swellings, a Biopsy, under local anaesthesia, was done, 10/11/33 by Mr. Chiene, and a definite conclusion as to diagnosis was arrived at. One gland was removed from below the angle of the jaw /

jaw on the Right side, and the other gland was from behind the ear of the same side. Both glands had fluid content, and some of this was sent for examination.

The Pathological Report on the Histology of the glands was that the condition was of secondary Thyroid Tumour. The Report stated that in both specimens examined, most of the Lymphoid Tissue was replaced by carcinomatous growth, and that the neoplasm was composed of columnar cells which were assuming a papilliferous type of growth. In certain areas there was an attempt at the formation of acini which contained colloid. The appearances were suggestive of an origin in the Thyroid Gland. There was no evidence of Tuberculous infection in the tissue sections.

The pus from the glands was also examined. Direct films of material from within the retroauricular gland showed numerous lymphocytes, but no Tubercle Bacilli were seen. Similar material from the cervical gland showed the presence of many lymphocytes, and Tubercle Bacilli were seen in the films.

Following the Biopsy, patient was discharged but attended the X-Ray Department for out-patient treatment. The affected area was treated by Deep X-Ray Therapy. This treatment was applied on eighteen occasions between January and August 1934. During that period she was re-admitted to Ward 11, 10th /

10th January, 1934, for observation, and for X-Ray Therapy.

The swelling had grown rapidly since discharge, after Biopsy. The mass at this time occupied the Right side of the neck, and stood out prominently. It was not tender, did not fluctuate, though it was then soft and painless.

She complained of difficulty in breathing at that time. This was a new development, but it did not distress her very much. She was discharged after a first treatment with X-Rays, following treatments being given as an out-patient. According to patient, the course of treatment was not accompanied by any improvement in the local condition. There was no reduction in the size of the swellings. On the contrary, the neck periodically appeared to be fuller.

Patient has lived most of her life, prior to living in Edinburgh, on a farm near Enniskillen, Ireland, and not far from the sea-coast. This is not a "goitre-area".

Her previous history is of freedom from illness.

Her parents enjoyed long life and freedom from illness. There is definitely no history of Thyroid dysfunction in her relatives.

On examination:

Intelligence and development are average. There are no obvious appearances of a hyperthyroid state.

The /

The most noticeable feature is the large generalised swelling of the tissues of the Right side of the neck, and extending over the edge of the mandible on the cheek. Both cheeks are redened, and there is an appearance of Rosacea. The swelling, however, is confined to the Right side.

Local examination:

There is considerable swelling of the Right side of the neck. The swelling has an irregular contour.

The swelling is non-pulsatile.

Hard, rounded masses of swollen Lymph Glands can be palpated.

Glands on the Left side of the neck are not enlarged, and not hard.

There is no local rise in Temperature.

Palpation of the Thyroid Gland and inspection, on swallowing, reveals no abnormality in size of the gland, and no irregularity in its form and consistence.

The mouth, gums and tongue show no abnormality of form, but the mouth and tongue are excessively dry and this makes speech difficult. She has to sip large quantities of water to maintain the mouth moist.

Examination of the larynx was not carried out at this stage, but she was examined at a later date - 22nd May, 1935 - in /

in the Ear, Nose and Throat department with the following result. There was nothing in the hypopharynx or laryna to account for the feeling of fullness she complained of. There was a good nasal airway and her Tracteal Rings were normal. There was nothing abnormal in the Lateral Pharynx or in the Nasopharynx. It was noted that she had difficulty in opening her mouth, from scarring, and this was thought to account for her feeling of choking.

The Retroauricular swelling which had been examined in 1930 in that department had been undiagnosed, but later Biopsy showed it to be a precursor of later gland involvement by Thyroid Carainoma. There is no swelling at present in the region of either auricle.

Circulatory System: No symptoms. On admission the pulse was slow - around 60 per minute.

Anaesth Heart sounds closed in all areas.

Respiratory System: Respirations constantly twenty per minute.

Breath sounds vesicular.

No evidence of intrathoracic gland involvement by tumour spread.

No Retrosternal downgrowth of tumour demonstrable.

Temperature: At first showed daily variation from 97° - 100° , but /

but settled to subnormal level.

Alimentary System: There were no symptoms, and no abnormal physical signs, relative to this system.

Urinary System:

No symptoms.

Pre-operative specimen of urine was Negative for Albumen, Sugar, and Blood.

Medication in Pre-operative Period.

28/ 9/35.	Triple Tablets.	gr. X	at 10.30 p.m.
8/10/35	Nembutal	gr. III.	at 10.15 p.m.
9/10/35	Nembutal	gr. III and	
	Atropine	gr. 1/1000	at 11.15 a.m.

9th October, 1934. Operation for Neck Dissection.

Mr. Chiene. 12 noon.

Anaesthetic: Intratracheal gas and oxygen.

Stages in operation.

The incision (see diagram) was carried along the Anterior Border of the Sternomastoid muscle from the Region of the Mastoid Process, almost to the clavicle. An incision was carried at Right-Angles to this, running over the swelling, just below the jaw margin.

The subcutaneous tissues were found to be oedematous, and /

and greatly thickened. Gland masses, large, hard, and dark in colour were noted in the general thickening. The tissues were resected up to the angle of the jaw, and the flaps held aside.

Exposure of the Internal Jugular Vein.

Exposure and clearance of the Right Sterno-mastoid muscle. The muscle was freed and loosened, and retracted posteriorly to allow of access to deeper structures. The muscle was not severed.

Exposure and Ligation of the Internal Jugular Vein, and removal of a group of glands at its lower end.

Exposure of the R. Common Carotid Artery.

Removal of the Gland masses surrounding the Common Facial Vein, and Ligation of the Vein. Digastric muscle isolated.

Excision of a group of glands in the Posterior Triangle of the neck. (See diagram, for position of Gland Masses. I 10.

Examination of the Submaxillary Region - there was no lymph gland involvement.

Examination of the Parotid Region. Removal of affected lymph glands lying on the lower Border of the Parotid gland. These glands were soft and friable, and burst on manipulation. Yellow fluid was contained in these glands - possibly from tissue disintegration.

The /

The whole Operation Area was washed out with warm hydrogen peroxide solution.

Tissue flaps were approximated with catgut sutures. The Skin Layer was held by Michel's Clips.

The gland masses removed showed lobulated glands, hard in consistence, purple in colour, resembling "colloid" or Thyroid gland tissue.

Post-operative Medication.

9/10/34	{ H.I. Heroin	gr. $\frac{1}{12}$	at 3 p.m.
	{ H.I. Heroin	gr. $\frac{1}{12}$	" 10 p.m.
10/10/34	H.I. Heroin	gr. "	" 9.30 p.m.
11/10/34	H.I. Heroin	gr. "	" 11.40 p.m.
12/10/34	H.I. Heroin	gr. "	" 11.40 p.m.
13/10/34	Triple Tablets	gr. x	" 10 p.m.
14/10/34	" "	gr. x	" 10.15 p.m.
15/10/34	" "	gr. x	" 10.40 p.m.

Fluids were given freely - water, fruit juice, and milk were given from the day following the operation.

Post-operative Results and progress.

The operation was followed by a period of considerable discomfort and pain, weakness, and malaise. The local swelling /

swelling was temporarily reduced in size, but again swelled uniformly. There was a slight decrease in this swelling on 15th October, 1934. The increase had been due to oedema.

18th October, 1934. The main symptoms were local pain, and a throbbing in the Right side of the neck.

The mouth was still dry, and there was difficulty in swallowing, especially of solid food. There was an increase in diurnal temperature variations.

There was a Right-sided Facial Paralysis due to section of the Cervico-facial division of the Facial Nerve, and oedema and pressure around the other portions of the Nerve.

20th October, 1935. The general condition improved but the following symptoms were still present:

Pain, locally, and in the Region of the Sternum.

Swelling of the Right side of the Neck.

Sensation of constriction across the Trachea, at the level of the Thyroid gland.

Dryness of the mouth.

Right-sided Facial Paralysis.

There is no toothache, and no earache.

25th October, 1935. Neck Pain less intense.

The swelling of the cheek and Right side of the Neck remains rounded and prominent. Two areas, one over the jaw, and one in the neck are prominent, hard to the touch, and tender /

tender.

Sensation of constriction or choking is still present.

The mouth is more moist than formerly.

There is a return of Facial muscle function.

26th October, 1935. Patient was discharged from

Hospital.

<u>Date.</u>	<u>Day.</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>
26/Sep./34.		97°	76	20	1 On admission. Cascara.
27		96.5°	60	20	2 Cascara.
28		97°	50	20	1
29		97.4°	56	20	1
30		97.4°	60	20	1 Cascara.
8/Oct./34.		96.6°	54	20	2 C. Oil. S. & W. enema.
9	1	97°	72	24	2
10	2	99°	78	20	2
11	3	99.3°	76	20	0 Henry's Solution. S. & W. enema.
12	4	98.4°	66	20	4
13	5	97.8°	60	18	2 Cascara.
14	6	98.8°	66	20	0
15	7	99.4°	84	20	2
16	8	99.2°	68	20	3 Cascara.
17	9	99.8°	88	20	3 Up. Clips out.
18	10	99.6°	78	20	1
19	11	99.4°	64	20	1
20	12	99.2°	76	20	1
21	13	97.6°	76	20	0

<u>Date.</u>	<u>Day.</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>
22/Oct./34	14	97.6°	78	20	2 Cascara.
23	15	98.8°	72	20	1
24	16	99.2°	68	18	2 Cascara.
25	17	98.2°	76	18	2
26	18	97°	68	18	1

Was on 4 hourly - Chart till 16th. Swinging Temperature.

Elevated in the evening. On 15/9/35 reached 101°.

Histology of the Condition.

Report on Slide XXXVIII. No.891, was that the tissue showed extensive involvement of the Lymph gland by malignant growth. There was an irregular growth of cells which were attempting to form small acini, many of which contained colloid. There were larger collections of atypical colloid.

Practically no lymphoid tissue remained, the greater part being replaced by the Malignant growth.

The appearances were those of secondary deposits of a carcinoma of the Thyroid.

Slide XXXVIII. No.878 is discussed with the diagrams of the section. The gland is undoubtedly involved by Thyroid tissue metastatic spread. (See diagrams.)

Follow /

Follow-up Note.

Patient reported last in January 1936 - 15 months after treatment.

Radiation therapy had been stopped, and the local condition was unchanged; i.e., a lesser degree of neck swelling remains, and this is stationary.

Case Commentary:

I. Differential Diagnosis.

Several conditions have to be considered, in a case, the main feature of which is enlargement of the Cervical Lymphatic Glands.

Chronic Inflammatory conditions, and Glandular Tuberculosis can be excluded owing to the size, and firmness and induration of the gland masses. There is no upset in the Temperature.

Lymphadenoma has to be considered, but the enlargement is confined to one Region only, and the glands are not discrete.

Simple Lymph Gland tumour - Lymphoma - which on rare occasions develops considerable size and becomes lobulated, has to be considered.

The condition appears to be more of a Malignant state, and the diagnosis rests between Lymphosarcoma - arising from the Lymph glands, or Secondary Malignant Growth arising from one of a variety of structures including the mouth and tongue, the tonsil /

tonsil, the thyroid gland, and the ethmoid. The nature of the spread may be an epithelioma, a carcinoma, or a sarcoma, or a combination of these. Sarcoma of the thyroid is a rarity.

Local examination only served to rule out obvious causes, but suggested strongly the possibility of malignant spread. On physical examination no thyroid abnormality was detected, and there was no history of thyroid dysfunction.

Biopsy was all essential, and gave a definite diagnosis of Carcinoma of the Thyroid Gland.

A W.R. was not carried out, but the condition could not result from a gumma alone, although this possibility should be considered in these cases.

2. Discussion of the Case.

Carcinoma of the Thyroid is not an uncommon condition in women of the age period 40-60 years. While it may develop in a gland, the site of long-standing disease, it can develop spontaneously, and often unsuspected, as there may be little or no local manifestation. This patient's condition is representative of this class. Patient shows no evidence of thyroid hyperfunction, but is rather of the hypo-thyroid type. The thyroid is small and there is neither visual nor palpable abnormality, although hoarseness, and the presence of blood-stained sputum suggests immediate spread to an involvement of the /

the Recurrent Laryngeal Nerve, and the trachea.

The insignificance of the Thyroid, as contrasted with the gross secondary changes caused by the spread of carcinoma, has given rise to cases of unusual interest. In these cases there is present a definite primary lesion, but the lesion is slow-growing. The Literature contains accounts of the more notable cases.

In one of Sir Fredrick Eve's cases, secondary involvement of bone by thyroid carcinoma necessitated an amputation at the hip joint, and at the time of operation, no lesion could be detected in the Thyroid gland, but some months afterwards the gland became enlarged. De Quervain¹ asserts that there are two groups of thyroid Carcinoma - one in which the secondary spread is to the viscera, especially the lungs, and the other with secondaries more common in the parietes - the primary growth of which is relatively benign and slow growing. He states that the mildest form of carcinoma of the Thyroid is presented by those cases which look innocent yet are associated with secondary deposits.

A case of Latent Thyroid Adenocarcinoma has been reported,² the first evidence of which was a spontaneous fracture of the /

1. de Quervain. "Goitre". 1924.

2. Moiroud P. et Cottalorda. J.

"Tumeur osseuse de structure thyreoidienne avec integrite apparente du corps thyreoides."

Ana. d'anat. pathol. et d'anat normale

Medico-chirurg, Paris. 1932. IX. p.123.

the Radius, the local tissue being of Thyroid structure. In that case the Thyroid gland was not hypertrophied, but was small, regular, and contained no nodules clinically appreciable, and was neither painful nor tender.

A.J. Walton^{1.} records a case in which a swelling was removed from the front of an ear, and the condition was found to be a carcinoma sarcomatoides of the thyroid tissue type, but there was no presence of any lesion in the Thyroid. Such cases present extreme difficulty in diagnosis, but the difficulties are of little practical value, as excision has to be carried out, and this measure leads to diagnosis.

Such cases are worthy of record, as thyroid carcinoma is often overlooked, even by the pathologist. A case in Ward 11, at present, - Miss Janet Orr - was a case of this kind, in which a sacro-coccygeal tumour was excised, and the pathological report was to the effect that the tissue was of an adenocarcinoma probably of uterine origin. Gynecological findings were negative. One year later there was a sudden development of a neck swelling - obviously thyroid, together with hoarseness. The original tumour was actually, on re-examination, of the thyroid-like tissue, though this had been unsuspected by the pathologist. Mrs. McGovern, in contrast, showed no distant metastases, as far as /

1. Walton, A.J. "Malignant Thyroid."

Lancet 1925. (1) p.650.

as could be ascertained, but resembled the other cases in that the primary growth was slow growing, and inconspicuous. The primary site is probably in the Right lobe and spread has been to glands already the site of tuberculosis activity.

Previous Radiation treatment has probably distorted the clinical picture as it may be partly responsible for the hypothyroid state, and may have influenced the primary focus itself, and also the rate of spread from it. Spread from such a focus is to the Regional Lymph glands, and then to more distant glands. Dissemination may also occur by the veins, owing to the intimate relation of gland substance with the surrounding vascular channels. Lymph glands spread would be to the Deep Cervical glands, to the Tracheal glands, and then to the Mediastinal glands. As far as is known in this case, the spread is localised to the first of these groups, probably owing to the effects of Radiation. Again, there are as yet no signs of dissemination by the blood stream having occurred. The osseous system, in particular, would be liable to be involved, especially the Sternum, the Spinal Column, and the Skull. The discomfort and pain experienced in the upper part of the Left side of the chest may be due to tumour spread involving the sternum, Lymph-channels, or underlying Lung. In the neck the spread is restricted to the Right of the Middle line.

The /

The R. Recurrent Laryngeal Nerve, and the trachea have been described as being pressed on. Such infiltration and growth, giving rise to hoarseness and breathlessness is an early feature owing to rapid malignant spread, when the capsule of the gland has been penetrated.¹ Dryness of the mouth, which was relieved by operation, may be explained by pressure of tissue against the R. Parotid gland or its duct.

The Facial swelling, apart from gland masses, was due to oedema and fibrous tissue excess. The thickening was partly due to Radiation, which probably caused fibrosis of the Lymph glands. Last operative swelling was due to ligation of vessels - the Common Facial Vein, and the Internal Jugular Vein. The swelling subsided and the throbbing disappeared.

The R. sided Facial Paralysis was merely temporary, due to pressure.

The incision was sufficiently extensive to admit of access to the affected glands. It is the type of incision commonly employed for neck dissection, and is somewhat less in extent than Senn's Z - shaped incision, used in similar operations. The operation aimed at removing the gland masses, and no attempt was made to excise the primary site. While Surgery can remove the involved structures it cannot cope with a widespread dissemination of malignant cells, and the operation was to be supplemented /

1. Spencer and Gask.

"Practice of Surgery. 1910. p. 827.

supplemented by deep X- Ray therapy. T. P. Dunhill,^{1.} speaking of such cases, said that where there was difficulty in breathing and alteration of voice, the Surgeon felt helpless, but urged a close working association between surgeon and radiologist, and a freer removal of early doubtful tumours, to avoid the risk of allowing a malignant growth in the region to develop unchecked.

The tumour is essentially slow growing, but is liable to rapid increase in size and spread. The general health is affected but slightly, reflecting the relatively benign type of neoplasm. Berry, J.,^{2.} speaking of this condition said that he had been many times impressed by the apparent general well-being of patients who were suffering from even advanced and extensive malignant disease. Alterations in health occurred only when the disease had reached an advanced - often inoperable - stage. Pain, dysphagia, and dysphonia were usually quite late accompaniments - namely, after the growth had penetrated the capsule and when it had begun to affect the surrounding local structures.

On discharge it was thought that X - Ray or Radium therapy would arrest the condition, and this proved so for some time. The / treatment was by excision of the affected glands followed by Deep- X-Ray Therapy.

1. Dunhill, T.P. "Diagnosis of Malignant Disease of the Thyroid Gland".
Proc. Roy. Soc. Med.
Lancet. 1924. (2) p. 1231.
2. Berry, J. ibid. p. 1231.

The Annual Report of the Radium Treatment Institute 1923 suggested that in some such cases, most striking results in the arrest of the disease were to be found in advanced and inoperable cases. Eighteen months after discharge there is little local change, and Radiation has been suspended. The combined effects of Surgical operation and X-ray therapy have been instrumental in giving years of fairly comfortable existence.

The Prognosis is poor. Marked relief cannot be expected. There is always a possibility of local increase in the primary focus, or of the appearance of distant metastases. The liability to intercurrent disease is decidedly increased, and treatment otherwise is symptomatic.

Summary: A Case of Carcinoma of the Thyroid is described, in which the main feature was secondary involvement of Cervical Lymph Glands. No primary tumour in the thyroid could be determined by Physical Methods, and the involved glands had been the site of an old-standing tuberculous infection.

Treatment was by excision of the affected glands followed by Deep- X-Ray Therapy.

Patient's Name: Leslie Smith.

Age: 57 years.

Address: 37 Forth Street, Bainsford, Falkirk.

Occupation: Coal Trimmer.

Medical Attendant: Dr. Melville,
Grangemouth.

Admitted, Ward 13, 27/10/34.

C A S E II.

Examined, 28/10/34.

Complaint: "Indigestion" and dyspepsia of twenty years

LESLIE SMITH.

Case History: PYLORIC STENOSIS.

Patient, who is a good witness, gives the following definite history of his trouble. In 1914, i.e., 20 yrs. ago, he began to suffer from dyspepsia. Up till that time he had followed his regular employment, and had been in good health. At this time he began to suffer from symptoms of "indigestion". He was troubled with abdominal pain two hours after taking food, he suffered from heart-burn, and eructations of bitter material into the mouth. The symptoms came on gradually, and he became progressively worse/

Patient's Name: Leslie Smith.

Age: 57 years.

Address: 37 Forth Street, Bainsford, Falkirk.

Occupation: Coal Trimmer.

Medical Attendant: Dr. Melville,
Grangemouth.

Admitted, Ward 12, 27/10/34.

Examined, 29/10/34.

Complaint: "Indigestion" and dyspepsia of twenty years
duration.

Case History:

Patient, who is a good witness, gives the following definite history of his trouble. In 1914, i.e., 20 yrs. ago, he began to suffer from dyspepsia. Up till that time he had followed his regular employment, and had been in good health. At this time he began to suffer from his symptoms of "indigestion". He was troubled with abdominal pain two hours after taking food, he suffered from heart-burn, and eructations of bitter material into the mouth. The symptoms came on gradually, and he became progressively worse/

worse throughout the whole of the following year.

In 1915, one year after the onset of the trouble, he was serving in the army in France, and was still troubled with the symptoms of his former indigestion. One night he was suddenly taken ill, experiencing severe epigastric-pain. So severe was the pain that it doubled him up, and he had to lie down for relief. Towards morning the pain passed away, and in the morning he observed that the material he had vomited during the attack of pain was dark brown in colour. On rising that morning, he had a feeling of extreme weakness, and this fact, in addition to the nature of the vomit, led him to believe that he had vomited blood. He attributed the cause of the pain and the vomiting to his usual indigestion, and to the nature of the food he had been eating. For this reason he did not report as being sick, but carried on, unattended. Following this incident, his condition improved, and his symptoms were mitigated until 1922 - twelve years ago.

In this year his former trouble began anew. At this time he was out of Army Service and had resumed his occupation as coal trimmer on the boats in Grangemouth docks. He endured fairly severe indigestion for four years, i.e., till 1926.

At this time the symptoms took a turn for the worse, and/

and he consulted his doctor, and a long course of medical treatment was instituted. He was given bottles of medicine, and powders. These gave him temporary relief. For the past eight years, he has attended his doctor periodically.

He has been in regular employment. During his work, he is in an atmosphere laden with coal dust. He thinks that the nature of his work may predispose him to stomach trouble. The irregularity of the work - Shifts necessitated irregularity in the times for taking a meal, and he was in the habit of taking a "piece" with him, to his work.

He was observed that, during his work with ordinary coal, his digestive symptoms have been severe, but that when dealing with anthracite he has freedom from trouble.

Two years ago he had a haematemesis.

During the past six or seven months he has lost 1 stone in weight.

Three weeks ago the whole condition definitely worsened, the main symptoms being in respect of

1. Pain - always across the epigastrium. The pain was worst 2 or 3 hours after food. It troubled him greatly between 1 and 2 a.m., and is more constant than formerly. The pain was relieved to a certain extent by food, and the taking of alkalis. Vomiting relieves the/

the pain. The taking of light foods during the night is resorted to, in order to relieve the discomfort, and allow of sleep.

The pain is usually either in the mid-line, or more commonly on the left side.

2. Sickness. Nausea after heavy meals, together with continued pain.

3. Vomiting, during "bilious attacks", when he brings up green (bile-stained) material. There has been no known haematemesis recently.

4. Increasing constipation.

On examination: Patient is a tall, well built man, but shows evidence of recent loss of flesh and pallor.

The tongue is coated and furred, but moist.

The teeth showed evidence of caries.

The gums were in a satisfactory state; there was no gingivitis.

Abdominal examination:

The abdominal skin is lax, on inspection. There is only a moderate fatty covering on the abdominal wall.

The outline of the stomach was not observed.

On abdominal palpation there was elicited tenderness on pressure in the epigastrium slightly to the left of the mid-line (see Diagram). There is some muscle guarding in/

in the upper left abdomen, anteriorly, with slight hyperaesthesia.

Splashing was elicited, two hours after food.

The Liver margin was not palpable. There was no palpable epigastric tumour.

There was no tenderness on pressure over the R. Iliac fossa, over the gall Bladder, or over the point of exit of the 9th Intercostal Nerve on the Right-side.

X-Ray examination was not carried out, nor was a Test-Meal given.

A previous Radiographic examination, in Falkirk Infirmary, 2 years ago, showed indirect evidence of Duodenal Ulcer. No definite ulcer Crater was demonstrated.

There were no symptoms referable to the nervous system. Pupils were equal and reacted to light.

Re-operative Treatment.

29/10/34 on day prior to operation.

Nembutal. gr. \overline{iii} . at 10.15 p.m.

Castor oil zvi.

S & W. Enema.

30/10/34. H.I. Atropine. gr. $\frac{1}{100}$

and Nembutal gr. \overline{iii} at 11.30 a.m.

Gastric lavage was not carried out.

30/10/34/

30/10/34. Operation. 12 noon. Mr. Chiene.

Laparotomy. Ethyl Chloride and Ether anaesthesia.

A median incision was made, above the umbilicus.

On entering the peritoneal cavity, the Pyloric portion of the stomach, and the first part of the Ruodenum were exposed. On examination it was found that there was a Pyloric Region Cicatricial contraction.

The Anterior Pyloric Vein of Mayo was not identified. The contracture was rather on the stomach than on the duodenal side of the pylorus. There was no evidence of peritoneal adhesion to an old perforation.

The condition was that of Chronic gastric ulceration.

Local lymph glands in the lesser curvature were enlarged. One gland was removed for histological examination.

The appearances were those of a simple and not of a malignant condition.

The greater omentum and the Transverse Colon were pulled up, and the Transverse Meso-Colon was stretched. An aperture was made in the Meso-colon, and through this a portion of the greater curvature of the stomach was protruded and clamped, with a rubber-covered clamp of the Cawardine occluding type.

A loop of Jejunum was isolated and similarly clamped./

clamped. The two viscera were then apposed and stitched together with a continuous catgut suture. The Gastro-intestinal flow was isoperistaltic.

A longitudinal incision was made through the Jedunal wall, and a corresponding opening in the wall of the Greater-Curvature of the stomach. The Stoma was directed in the oblique direction.

Lying on the stomach mucosa was seen a small amount of dark material, a specimen of which was removed for examination. No report on this was obtained.

The edges of the apertures were drawn together with continuous catgut sutures, and the clamps were removed from stomach and Bowel.

The Vermiform Appendix was not removed, and not examined.

The Transverse Meso-colon was sutured with Catgut with a view to reducing to size of the opening in it. The organs were replaced in the abdomen, and the wound closed; with catgut sutures for the deeper layers, and continuous horse-hair sutures for the superficial structures. No drain was used.

The operation carried out was that of a posterior gastro-enterostomy, the purpose of the operation being to overcome the dilated condition of the stomach by allowing of/

of free passage of stomach content directly into the small intestine. (See Diagram).

Post-operative Treatment and Progress.

For 4 or 5 days following the operation, patient was distressed by severe epigastric pain, this being aggravated by coughing.

There was some discomfort from flatulent distension

30.10.34. Heroin. (H.I.) gr. $\frac{1}{12}$. at 3.40 p.m.
 H.I. Heroin. gr. $\frac{1}{12}$ at 5.20 p.m.
 1. 11.34. Flatus Enema.
 30.10.34. Castor Oil zvi.
 Mist. Ammon. Carb and
 31.10.34. Pot. Iodid. zss. t.i.d.
 2. 11.34. Liq. Paraff. zss. t.i.d.
 4. 11.34. Triple Tablets. gr. \bar{x} .
 4.11.34. (Aspirin. Phenacetin and Caffeine) at 12.45 a.m.
 5.11.34. Aspirin. gr. x. at 6 a.m.
 8. 11.34. Atropine. gr. $\frac{1}{100}$ and
 7.11.34. Pitressin 1 ce. at 4.45 a.m.
 Heroin. gr. $\frac{1}{12}$. at 9.25 p.m.
 12.11.34. Stitches removed.
 - 14th day following operation.

Post-operative Specimen of Urine (31.10.34).

Acid/

Acid to Litmus.

Clondy.

Phosphates +

Marked urates deposit, on standing.

Sugar: --

Albumen: --

Temperature, etc. Course.

Date.	P.	T.	R.
29.10.34.	72.	98°	20.
30.10.34.	72	97	20. Pre-operation.
	<u>120.</u>	97°	24. Post-operation.
31.10.34.	<u>126.</u>	98°	<u>26</u>
1.11.34.	<u>124.</u>	97°	<u>28.</u>
2.11.34.	<u>102.</u>	97°	24.
4.11.34.	92.	96.5°	24.
5.11.34.	96.	98°	24.
6.11.34.	96.	97°	24.
7.11.34.	92.	99°	24.

Post-operative Diet Course.

Nothing was given by the mouth the first day. 4 hrly.
Rectal Salines were given.

A bland, fluid diet was given at first, and was
gradually built up.

On/

On discharge definite directions were given as to habits and diet. Alcohol was to be taken, if at all, in moderation. Smoking had to be avoided for 3 months after the operation, and later in strict moderation.

Condiments and sauces, sour fruits, and raw vegetables were to be avoided. Meals were to be small, light and more frequent, and butter, cream and milk were to be taken. The food was to be thoroughly masticated, and the teeth attended to.

Patient was allowed up on the 14th and following days, and was discharged on the 18th day.

His weight, at the time of discharge, was 11st. 2 lbs.

The convalescence had been interrupted by the presence of a cough, which tended to throw strain on the abdominal wound, and to cause local discomfort. There was also left sided Thoracic pain, but no physical signs of Pleurisy could be elicited. An antiphlogistine application greatly relieved the condition. Thereafter, recovery was uninterrupted.

The Report on the Lymph Gland removed from the lesser curvature of the Stomach was to the effect that the tissue examined showed dilatation of the Lymph Sinusoids. Many contained Red Blood Corpuscles, and there was also a certain amount of proliferation of the lining endothelial cells.

There/

There was no evidence of tuberculous or malignant involvement, as far as could be seen. These findings are in keeping with the Local appearances. Clinically this was not a malignant case.

Patient Reported in Feb. '35 - two months after treatment. He had gained 2 stones in weight, appeared to be in very good health, and his appetite was better than it had been during the past 20 years. He had resigned his work temporarily, and was going to visit relatives in Bermuda. The local wound had healed satisfactorily, and there had been no symptoms since discharge. The benefit of the operation, as reflected in the general health, was very obvious.

Patient did not report again, and no further information as to his progress has been received.

Case/ on, be excluded in this case. The second of these is Diabetes Mellitus, particularly of the insular type, the main symptoms of which are weakness, wasting, and, seriously, in/

Case Commentary.

This case represents typically a condition of chronic but simple Ulceration of the Pylorus, in a man, aged 57 yrs. While Pyloric Stenosis, from the history and physical examination findings, was the most probable diagnosis, the question of complications, and additional factors must be kept in mind. In all dyspeptic cases Gall-bladder conditions have to be eliminated. The appendix as a cause of Reflex dyspepsia has also to be considered. Neither gall-bladder nor appendix appeared to be causative in this case; there was absence of abnormal physical signs in the gall-bladder region or in the Right Iliac fossa.

In this case the epigastric tenderness was towards the middle line, and the pain was widespread to the left of the middle line, thus suggesting a stomach rather than duodenal disturbance. In all cases of upper abdominal pain becoming constant, particularly in the adult, two general conditions have to be considered and eliminated. The first of these is Specific disease which is apt to present itself in a variety of ways, and which may simulate a local Stomach condition. This could, on general examination, be excluded in this case. The second of these is Diabetes Mellitus, particularly of the senile type, the main symptoms of which are weakness, wasting, and, curiously, in/

in some cases, upper abdominal pain. Attention has been drawn to the fact that diabetes may cause upper abdominal pain, and particularly in acute abdominal cases may present difficulty in differential diagnosis, the difficulty being greater because both groups show a Lencocytosis.¹ Careful testing of the pre-operative specimens of urine showed the urine to be free from sugar and acetone, and thus diabetes as a contributory factor in the symptoms could be eliminated with all safety.

In this case there had been a long history of abdominal pain, coming on 2 hrs. after food, and previous Radiographic examination had suggested indirect evidence of duodenal ulceration. For a considerable number of years, alkalis and belladonna had relieved the symptoms, but recently, relief had been only temporary. This suggests that recently the main trouble had been from stenosis rather than from active ulceration. This type of case was eminently suitable for gastro-enterostomy, as recent statistics go to show. In a recent series of Gastro-enterostomy cases, the result of operation was completely successful in over 80% of cases of duodenal ulceration. Recurrent ulceration was noted in approximately 7%. Gastro/irregularities in "shirts", and hours, with consequent irregularities/

1. Warner. E.C. "Therapeutic Value of Glucose".

Gastro-duodenostomy has been advised in younger subjects, but the results of gastro-enterostomy in patients over the age of 40 years were almost uniformly excellent, and cases with marked Pyloric obstruction and a dilated stomach - as in this case - were found to be always ideal from the Surgical standpoint. 2.

While there are numerous theories as to the aetiology of Peptic ulceration, it is often difficult, in a given clinical case, to give with certainty the aetiology of the condition present. There is no direct evidence in this case. He had exercised moderation as regards alcohol, and had been a non-smoker except in youth. With regard to more remote foci of infection, several teeth were found to be carious. This was far from desirable from the view of operation on the stomach, and it may have had some bearing on the stomach pathology. The teeth should receive attention in the near future.

The quality of food, and irregularities of meals, particularly in War-time have been mentioned as causative factors. This is a common finding in a number of these cases. The influence of occupation is doubtful. While gastric trouble is common in coal-trimmers, it is probably due to irregularities in "shifts", and hours, with consequent irregularities/

irregularities in meal-times. Coal dust would tend to affect the Pulmonary rather than the digestive system, and the lungs appear healthy. There would appear to be little foundation for the fact that anthracite dust relieves the gastric symptoms, in the way he suggests. I have been unable to confirm this suggestion from other coal trimmers suffering from similar alimentary disorders. The temporary relief from pain probably represented the periodicity of this disease in its symptoms.

Short of excision of the ulcer-bearing area, definite information as to the local cause of the ulcer cannot be given. Probable causes are minute embolism of local vessels, and also the presence of congenital islets of intestinal tissue, which are digestible by gastric juice, and which are said to play a part in the causation of erosion and ulceration. There was originally some doubt as to the exact locus of the ulcer. The history suggested a duodenal site, the signs were rather of a gastric ulcer. Ill-definition of the veins of Mayo made decision as to actual site, of the ulcer, difficult. The ulcer had probably been on the gastric side; the cicatricial contracture involved the pylorus. The actual site of the ulcer is of little moment, as the operative procedure is the same.

A/

A posterior Gastro-enterostomy was the operation of choice, an operation which, if properly performed is almost invariably satisfactory. The operation was devised to assist the healing of the ulcer mechanically and functionally, and the result is obtained as follows. The Gastric contents escape readily into the small bowel, and so the ulcer is rested and allowed to heal. The alkaline secretions from the Duodenum enter the stomach through the anastomotic opening and serve to neutralise excess acid in the Pyloric Region of the Stomach. From the early entrance of acid material into the jejunum there would appear to be a Reflex interference with, or inhibition of, the secretion of gastric juice, and the gastric secretion becomes arrested at an earlier time, so that hyperacidity is further diminished. Thus a satisfactory result is caused by allowing the existing ulcer to heal up, and to remove one of the factors in its causation - the excessive gastric secretion and acidity.

If at the exploratory operation the ulceration had been seen to have caused cicatricial Stomach contraction - hour-glass stomach - local excision or gastro-gastrostomy would have had to be considered. Had early malignancy of the old ulceration been determined clinically, and had there been no apparent secondary spread, the question of partial/

partial gastrectomy and local gland removal would have arisen. The condition being undoubtedly simple, these measures were not required.

Some points in the operative method arise. A double clamp was used for approximating the stomach and the jejunum. Clamps are of decided advantage in that they prevent escape of stomach and bowel content, and control haemorrhage from the wounds prior to suture, and also approximate and support the viscera. They have their disadvantages, and these are that in providing a bloodless field, larger vessels may be missed, and that the suture line is more liable to trauma, and the risk of complication increased. It has been pointed out that the mucosal suture line is the site of an acute spreading ulcer, a granulating and later a healing ulcer, and finally a fibrous scar covered by a single layer of regenerated epithelium, and that adjacent trauma causes primarily an ulcer of greater extent. ³. Injury inflicted by anastomosis clamps may be responsible in some cases for delayed healing of the mucosal wound and for secondary ulceration. ⁴. However, in this case the clamps were light, of the occluding variety, and rubber-covered so as to minimise trauma.

The/

³. Wilkie D.P.D. Edin. Med. Journ. 1910. v. 316 et. seq.

⁴. Dott. N.M. Lancet 1922. p. 661.

The Transverse Meso-colon was sutured to prevent the possibility of herniation of bowel through the opening.

Complications to be watched for are Post-operative haemorrhage, acute Dilatation of the Stomach, and "vicious circle" vomiting. Such conditions as jejunal or stomal ulceration, gastro-jejunal colic fistula, and retrograde intussusception are delayed, and extremely unlikely to occur in this case. The stoma functioned well, and solid food could be taken easily, the stoma being sufficiently large. Left-sided epigastric pain in the early post-operative period was due to local interference and flatulence, and was aggravated by coughing. The distress was transient, and bowel distension was relieved by flatus enemata, and by Pitressin. The chest condition was appropriately treated, and relief resulted.

Patient made very satisfactory post-operative progress, and the case is one in which a good prognosis can be reasonably promised.

Summary.

The case is of a condition of Pyloric Stenosis, supervening on Chronic Gastric ulceration in a man, 57 yrs. of age.

Gastro-enterostomy was performed, and afforded relief from previous symptoms, the post-operative progress being very satisfactory.

Mrs. Mabel Jamieson.

40 Years.

St. Ann's, Lavenham, Musselburgh.

Housewife.

Dr. Gray,

Wolsey Gardens,
Portobello.

C A S E III.

MRS. MABEL JAMIESON.

ACUTE INTESTINAL OBSTRUCTION.

Patient's Name: Mrs. Mabel Jamieson.

Age: 40 Years.

Address: St. Ann's, Levenhall, Musselburgh.

Occupation: Housewife.

Medical Attendant: Dr. Gray,
Wolsey Gardens,
Portobello.

Present Complaint: Lower abdominal pain and sickness.

CASE HISTORY:

Patient was admitted on Waiting Day as an emergency case, suffering from acute abdominal symptoms. There is a history of long-standing trouble; she has had various illnesses. She is of a nervous temperament, talkative, and a good witness.

She was in fairly good health until eight years ago, when she gives a history of "neuritis" in the Right arm.

On 28th November, 1928 she was admitted to Ward B, her complaint at that time being pain in the medial aspect of the Right Arm, and weakness of the arm for two years. For six months previously she had pains shooting down the medial aspect of the Right arm.

In 1926, she had slipped and fallen, striking the front of her Right Shoulder against a wall. Several days later she had suffered from gnawing aches in the Right Axilla. On admission in 1928, she suffered pain almost daily, lasting from half an hour to 3 or 4 hours at a time. Strapping the arm to the /

the side relieved the condition temporarily. The condition was diagnosed by her doctor as neuritis, and he instituted appropriate medical treatment.

Several months before admission she experienced sharp, shooting pains in addition to the ache. These radiated to the Right Breast or Shoulder, and into the inner aspect of the Right Arm, and extended into the Little Ring, and Middle fingers of the Right hand. She herself suggested that the Right Pectoralis Major muscle became stiffened when the pain was worst.

She experienced loss of power of the Right arm. The wrist gave way, and the arm felt limp. The inner three fingers became blanched and numb, but were not painful. The patient at this time showed signs of general nervousness, and suffered from occipital headaches. There were no abnormalities of Circulatory or Respiratory Symptoms. She was seen by Professor Bramwell, and X-Rays showed no indication of Cervical Rib outgrowth.

11th December 1930: After an interval of two years she was again seen by Professor Bramwell, who considered this a case for Surgical operation. X-Ray appearances still showed no sign of Cervical Rib. At this admission there was marked pallor /

pallor of the Right arm, and some wasting of small muscles of the little fingers, especially the abductor digiti quinti.

There was extreme tenderness along the course of the Median and Ulnar nerves, and tenderness below the middle third of the Right Clavicle.

Mr. Cochrane operated, the anaesthetic being chloroform and ether. A curved incision was made along the Posterior Border of the Sterno-Mastoid muscle, and the upper Border of the Clavicle (see Diagram). The flap of skin and Platysma was reflected laterally.

The External Jugular Vein was divided. The Posterior fibres of the Sterno-Mastoid were cut through. The Omo-hyoid was divided.

The Brachial Plexus was freely exposed as was also the Subclavian artery. The Scalenus Anticus appeared rather tense and was divided. There was apparently no structure pressing on the Brachial Plexus, and it was thought inadvisable to remove the first Rib.

The wound was closed, the omohyoid being reunited, and the sterno-mastoid being reconstituted. The Platysma was closed by interrupted catgut sutures, and the skin held with Michel's clips.

The Result of the Operation was that of uninterrupted recovery, for in 1931, on examination, the symptoms were completely /

completely relieved. The good results have been maintained, for on examination in 1934, for while patient complains of slight weakness of the Medial aspect of the forearm and hand, there is no pallor of the Skin, Muscle movements are satisfactory, and there is no pain and no tenderness over the line of the nerves.

In May 1931, - $2\frac{1}{2}$ years ago - patient had a Caesarian Section performed, for the delivery of her seventh child. The other children had been born normally, the deliveries being unattended by complications. All the children are well. The reason for Caesarian Section was said to be presence of a Pelvic Tumour - possibly a uterine fibroid. According to patient's story, no tumour was found or dealt with at the section. Since the operation she has experienced difficulty with, and sometimes frequency of, micturition. She complains of "something coming down", but this symptom is not marked, and occurs only at intervals. It was thought that the gynecological operation started a series of abdominal complaints, for she has never been properly well since. For $2\frac{1}{2}$ years she has been troubled with vague abdominal symptoms.

Periodically, when she has been "run down" in health, she has experienced lower abdominal pain, and this tended to settle in the Right Iliac Fossa. She has also suffered from Rheumatic pains /

pains in the limbs. Of recent months she has experienced stiffening of the jaws and pain in the tempero-mandibular joints. For this condition she has received electrical treatment weekly, for the past nine weeks, with some improvement resulting.

There is little in the family history, but for the fact that her fifth child, a boy, at the age of 8 years, developed an acute intussusception. He had been troubled with vague abdominal symptoms for six months. The child died, after operation, within 24 hours of the onset of the acute attack.

Her Recent History is of recent origin. She was admitted as an acute emergency on Waiting Day, 10th November 1934. While she has had occasional abdominal pain for over two years, she had been troubled all day, on the day of admission with abdominal pain. The abdominal pain was severe and was situated in the lower abdomen just below the umbilicus. The pain persisted, and was worse after her mid-day meal. The pain was constant in position.

She vomited food recently taken. She was nauseated, and vomited several times. Hot applications to the abdomen had no beneficial effect.

She had a cough which came on early on the day of admission.

She had no shivering turns.

A menstrual period had just been completed. She had been constipated for several days prior to admission.

On examination:

Patient was blanched, and had an anxious look. The skin was dry.

The teeth are artificial. There had been a history of caries and pyorrhoea, but the condition had been dealt with, all the teeth removed prior to her previous operation.

The tongue was white furred, but slightly moist.

There was very slight abdominal distension.

On palpation, there was extreme tenderness elicited in the sub-umbilical Region in the mid-line, and also in the Right Iliac fossa.

There was a degree of muscular rigidity, especially on the Right side.

Resistance was noted over the Right Iliac fossa.

Examination was restricted owing to the pain, nervousness, and distress of the patient.

A rectal examination was not made.

No abnormality in Hernial sites was detected.

Auscultation of the chest revealed no Pulmonary or pleuritic abnormality. The cough was of one day's duration.

Cardiovascular system:

No cardiac abnormality was noted.

Pulse /

Pulse, on admission, 84, and feeble.

Central Nervous System: Patient from the outset showed signs of general nervousness.

Pupils react to light.

Pre-operative Specimen of Urine:

Colour: Straw. Cloudy. Acid.

Deposit of urates.

Albumen: Negative.

Sugar: Negative.

Blood, Pus: Negative.

Phosphates: X X

Pre-operative Medication.

10th November, 1935. H. I. Atropine. gr. 1/100 at 10.30 p.m.

10th November, 1935. Operation, on evening of admission.
11 p.m. Mr. J. R. Cameron.

Ethyl-Chloride Induction, and ether anaesthesia.

A long Right Paramedian Incision was made below the umbilicus. (See Diagram).

The Anterior wall of the Rectus Sheath was incised.

The Right Rectus muscle was retracted Laterally.

The Posterior Wall of the sheath, and the parietal peritoneum were together incised.

The Caecum was sought for, and delivered out of the wound. It was found to be distended and enlarged. The Caecum /

Caecum was long, and unduly large. It was unduly mobile, and this was considered to be a congenital abnormality. No attempt at fixation of the Caecum was made, owing to its abnormal length.

The Vermiform Appendix was Subcaecal in position, and was kinked in the middle third. Its mesentery was clamped and the appendicular vessels ligated. The mesentery was divided. The appendix was doubly clamped at its proximal end, and divided. The stump was sutured with catgut, and carbolised. The stump was invaginated, and surrounded by a purse string suture.

On opening the appendix, an elongated faecolith was found occluding the lumen in the proximal third of the organ. Distally, the mucosa showed only slight congestion. There was a congested zone further along the lumen, probably due to clamping of the vessels. There was no pus formation; the walls were not thickened. (See Diagram.)

At this stage the original incision was lengthened, and the small intestine in the ilco caecal region was examined. A loop of ileum was found to be obstructed by a band of omentum which was adherent to it. The omental Band was seen to pass across this loop of intestine and to be adherent to the Anterior surface of the uterus. The loop proximal to the obstruction was distended, and dark in colour; that distal to the obstruction was collapsed.

The /

The omental band was freed from the loop of bowel. The obstruction was due to chronic adhesion resulting from the old operation of Caesarian Section. The uterus apart from the scar was apparently normal. The uterus was not enlarged, and no pelvic tumour was seen or felt. The Right Fallopian Tube had been removed in its lateral half, and a portion of the Left Tube also had been previously removed. The obstruction was in no way due to adhesion between bowel loops but to pressure of the omental band which adhered to the uterine scar.

The wound was closed in layers, the Posterior wall of the Rectus sheath and Peritoneum being united with a continuous catgut suture, while the skin and superficial tissues were held together by 13 horsehair sutures. Nine Michel's clips approximated the wound edges. The wound was closed without drainage.

Post-operative Drug Treatment.

11/11/35.	(H.T. Heroin.	gr. 1/12	at 1 a.m.
	(H.T. Heroin.	gr. 1/12	at 6 a.m.
	(H.T. Heroin.	gr. 1/12	at 10.30 p.m.
	(H.T. Heroin.	gr. 1/12	at 3.10 a.m.
12/11/35	(H.T. Morphine.	gr. 1/6	at 12.30 p.m.
	(H.T. Heroin.	gr. 1/12	at 11.30 p.m.

No further sedatives were required.

T. P. and R. Chart. (Evening Temperatures are quoted.)

<u>Date.</u>	<u>Day.</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>	
10/11/34	1	19.4°	84	22	0	On admission.
11/11/34	2	101°	108	24	0	Flatus enema.
12/11/34	3	102°	118	24	2	Flatus enema.

<u>Date</u>	<u>Day.</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>	
13/11/34	4	<u>100°</u>	<u>104</u>	20	3	C. Oil.
14/11/34	5	99°	84	20	3	Cascara.
15/11/34	6	98°	88	20	2	
16/11/34	7	98°	84	20	1	Petrolagar.
17/11/34	8	97.6°	<u>92</u>	20	2	
18/11/34	9	97°	84	20	1	
19/11/34	10	97°	84	20	1	Few Clips out.
20/11/34	11	97°	84	20	1	
21/11/34	12	97°	<u>92</u>	20	1	Clips and stitches removed.
22/11/34	13	97°	88	20	1	

After the fourth Day Temp. and Pulse settled, and there was no further pain or discomfort.

All clips and stitches had been removed by the 11th day, and she was allowed up. She was discharged on the 12th day, having made a good and uneventful recovery.

Further Post-operative Progress.

Patient was again seen, 21/12/35, 13 months after her operation.

After discharge from hospital she had spent one month in bed.

She still suffers from Periodic attacks of lower abdominal pain /

pain. She also experiences backache and Right-sided pain. It had been suggested by her doctor that the pain may be of the nature of a Renal-Colic due to kinking of the Right ureter.

The bowels are still constipated, and purgatives are habitually taken.

Menstrual Periods, while formerly regular at 3 weekly periods are now becoming irregular.

There is a great improvement in the function of the Temporomandibular Joints.

The patient is still highly nervous and excitable, and is apt to worry about her abdominal condition. She considers that she has never been really well since her operation. She complains of occasional sickness and headaches. She is still under medical supervision and treatment. It is probable that the undue mobility of the caecum is the cause of her symptoms, as such a condition has been known to cause discomfort in the Right Iliac fossa or symptoms referred to stomach, duodenum, gall bladder or kidney. In more normal conditions, treatment by plication or colopexy would be indicated.

Case Commentary.

This case of ACUTE INTESTINAL OBSTRUCTION presents several points of interest, both in regard to the present illness, and previous disease.

The history of Symptoms as might be caused by the presence of a Cervical Rib is worthy of record in the light of the findings /

findings in the present illness. Cervical Rib is a well-recognised congenital abnormality, in which one or more bony outgrowths, with separate centres of ossification, arise from the lowest Cervical Vertebra, and articulate with the Vertebra. Such an outgrowth on one or other side tends to press on the main Blood Supply to the upper extremity, and also on the Nerve Plexus, and the Sympathetic Nerve Supply in relation to the Plexus. The symptoms are those of prolonged pressure on these structures. Recent evidence has been obtained of inflammatory changes in the 1st Dorsal Nerve, and the Inferior part of the Lower Trunk of the Brachial Plexus, the change affecting the grey Rami, and to this fact the Vascular Symptoms have been traced. 1.

In this case the old history resembles that of a true case of Cervical Rib, the symptoms being confined to the R. Upper Limb - viz. weakness, pain, stiffness, and pallor of the fingers. While the condition was first treated as a neuritis, it was later decided that, despite the Negative X-Ray appearances, operation was justifiable. This procedure ruled out the presence of a Cervical Rib, and of a fibrous band, which occasionally /

1. Blair, D.M., Davies, F. and McKissock, W.

"Aetiology of the Vascular Symptoms of Cervical Rib."

British Journal, Surgical, January 1935. Vol. XXII.

occasionally passes from the 6th Cervical Vertebra to the 1st Rib - a structure which would remain undetected by X-Ray examination. Trauma has little place in the onset of symptoms.

There was apparently no lack of muscle tone to account for her symptoms. The only local abnormal finding being a tense scalenus Anticus muscle, the division of which gave permanent relief from symptoms. It may be suggested that this condition represented a local minor congenital abnormality. This has some bearing on other abnormalities present.

The present acute abdominal condition has a definite aetology. The acute obstruction was responsible for the sudden malaise, pain, and vomiting, and was due to an omental band which passed to the uterine scar, and by pressure obstructed a loop of ileum. The band was adherent to the scar from the previous Caesarian operation. The stated reason for the operation was a uterine tumour, possibly a fibromyoma, but as far as she is aware, no such tumour was found. Present examination reveals no trace of such a tumour. The violation of the sanctity of the abdomen had, however, resulted in a dangerous adhesion. One advantage of a Lower Segment operation is suggested, in that an adhesion would have been less likely to form.

While the condition of acute obstruction was very definite, and the findings at operation sufficiently clear, that condition alone /

alone, while explaining recent symptoms may not be the whole cause of occasional abdominal pain throughout the past two years. The Appendix was rightly examined, and removed, and while it had not been the site of chronic inflammation, it shared in the local congestion, and was kinked. Its removal did not add appreciably to operative risk.

A more probable cause of R. Iliac Fossa discomfort, of long standing, is to be found in the unduly long and enlarged Caecum. The condition, while being associated with the history of constipation, is not due to that cause alone. The mobile state of the Caecum represents a further congenital abnormality, it being recognised that such congenital abnormalities tend to multiply in a single individual. In fact, it may be that the shortened Meso-appendix, which caused kinking of the appendix in this case, may also be the result of congenital malformation.

Colopexy for mobile Caecum, by the method devised by Wilms was considered inadvisable owing to the extreme length and mobility of this part of the gut.

Differential Diagnosis in this case led to the consideration and elimination of several conditions.

A recent cold, and onset of cough, called for examination of the chest, to exclude inflammatory conditions of the Right lung /

lung and Pleura.

Urine examination excluded urinary tract infection.

The possibility of a Meckel's Diverticulum had to be kept in mind.

Hernial sites were normal.

There was no evidence of genital tract infection.

The condition was abdominal, and suggested small bowel obstruction rather than a typical acute appendicitis. An estimation of urine chlorides - reserved for cases where doubt exists as to whether the condition is due to a pneumonia or an appendicitis - was not carried out, and would have been affected as a result of the obstruction.

Constipation - as a sole cause was insufficient to account for the present symptoms and signs.

Abdominal influenza had to be considered, and was likewise excluded.

From previous history of sterilisation, ectopic gestation could at once be excluded.

The case was undoubtedly one for Laparotomy and previous operation gave the clue to the cause of the obstruction.

There was a further aspect of this case, which while not being congenital in origin may have some bearing on the abdominal trouble. There is a history of arthritis of the Temporomandibular /

Mandibular Joints, a condition which may have some relation to constipation and an inflamed appendix. No other obvious septic foci are present. The association between appendicitis and Rheumatism and Arthritis has long been recognised. G.A. Sutherland drew attention to this and reported several Cases.^{1.} The significance of the association has since assumed greater proportions.

More recently the role of the endocrine glands in such disease conditions has been recognised. While it was formerly thought that the septic focus directly caused Arthritis, it is now recognised that the septic focus arouses an endocrine disturbance which in turn gives rise to arthritis. Further, in such cases there is a derangement of Calcium Metabolism, and vasomotor phenomena, associated with perversion of Thyroid function are noted.^{2.} The hypertrophic variety of dys-thyroidism corresponds to osteoarthritis. In this case there is abundant evidence of vasomotor and endocrine upset. The arm symptoms were probably partly vasomotor in origin; there is a history of chilblains and deficient circulation, although there is no recognisable Rheumatic cardiac damage. The patient is decidedly /

1. Sutherland, G.A. "Appendicitis Associated with Rheumatism."
Edinburgh Hospital Reports, 1895. Vol. III., p.109 et seq.

2. Thomson, A.K.
"Endocrine Factor in Chronic Arthritis."
Boston Med. and Surg. Journal, April, 1925.

decidedly hyperthyroid.

Seen 15 months after treatment for the bowel obstruction, patient showed great improvement as regards the arthritis, although further local treatment may have been responsible for this.

The Family history in this case is of some significance, as one of her children died from the effects of an intussusception thought to be due to mobility of the Colon - probably another congenital abnormality.

Patient made a rapid and uneventful recovery following operation. She still complains of Right sided discomfort, and is still under medical supervision. The symptoms may be due largely to the mobile condition of the Caecum, and to constipation. Patient is approaching the menopause, and the general nervous state is not conducive to the best progress. The operation should have no ultimate ill effect, and a good prognosis should be given, and good progress reasonably expected. Any future trouble will probably be due to the Caecal condition, and may range from the common complaint of constipation, to a rare condition though possible in this case, of volvulus of the caecum

Summary /

Summary. The case is one of acute Intestinal Obstruction following post-operative omental adhesion to a uterine scar.

There was a congenital condition of Mobile Caecum present. There was a past history of symptoms resembling those due to a Cervical Rib.

There was a family history of intussusception. It has been submitted that a condition of multiple congenital abnormalities was present in this case.

Treatment was by appendicectomy and freeing of the adhesion.

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Case.

Patient's Name: William Archibald.

Address: 17 Yeaman Place,

EDINBURGH.

Age. 35 years.

Occupation: Grocer.

Medical Attendant: Dr. Robt.
Herchiston Avenue, Edinburgh.

Admitted, Ward C A S E IV.

Examined, 2/1/36.

Complaint: is WILLIAM ARCHIBALD. in the Right Inguinal
Region, or - in his own words - a "rupture on the right side".

Case-History.

The first feature which, in childhood, was noted by
OBLIQUE INGUINAL HERNIA and UNDESCENDED
his parents, and which led to an abnormality in the
TESTIS.
Right Inguinal Region, was the fact that the Right Testicle
did not descend into the Scrotum, whereas the left Testicle
descended normally. When a boy he was brought up on two
occasions to report at this Ward, on account of the
undescended Testis, was put on the waiting-list, but for
some reason, was never admitted for treatment. The condition
never caused any discomfort, and was allowed to go on un-
treated.

During the War, he was in Army Service, and in 1918,

on/

Case.Patient's Name: William Archibald.Address: 17 Yeaman Place,
EDINBURGH.Age. 35 years.Occupation: Grocer.Medical Attendant: Dr. Robb,
Merchiston Avenue, Edinburgh.Admitted, Ward 12, 6/1/35.Examined, 8/1/35.Complaint: is of a painful swelling in the Right Inguinal Region, or - in his own words - a "Rupture on the Right side".Case-History.

The first feature which, in childhood, was noted by his parents, and which pointed to an abnormality in the Right Inguinal Region, was the fact that the Right Testicle did not descend into the Scrotum, whereas the left Testicle descended normally. As a boy he was brought up on two occasions to report at this Ward, on account of the undescended Testis, was put on the waiting-list, but for some reason, was never admitted for treatment. The condition never caused any discomfort, and was allowed to go on untreated.

During the War, he was in Army Service, and in 1918,
on/

on medical examination, he was ordered to wear a truss. At that time, he had not observed a swelling in the Right Inguinal Region. Later on, due, as he thinks, to excessive marching exercise, a swelling appeared in the Right groin. He was operated on, and he thought the swelling was thereby reduced, although the Right Testicle still remained undescended. After a brief convalescence, the wound healed, and he made a good recovery.

He had no further trouble during five years following operation, but in 1923, a swelling reappeared in the Right groin. The swelling was entirely painless, and constant in form and size, and has remained there ever since. The swelling gave him no trouble until the 3rd week of December, 1934, - i.e., 3 weeks ago - when, in hanging up decorations in his home, he thought he strained himself unduly, and began to be aware of a dragging sensation in the region of the swelling.

On 2/1/35 - 4 days ago, the swelling disappeared, and there was intense pain locally, accompanied by nausea. The swelling subsided for 2 days, but returned during the night of 4/1/35 and the pain persisted. He consulted his doctor, who sent him to hospital, and he was admitted on Sunday evening, 6/1/35.

Summary/ It may be assumed that the Testicle is lying in the lower part of the hernial swelling, concealed by surrounding tissues. The greater part of the swelling is

Summary of Case History.

1. Undescended Testicle, Right Side, since Birth.
2. For Eleven years, Swelling in Right Inguinal Region.
3. For three weeks, Dragging sensation in the swelling.
4. Four days ago, swelling disappeared.

Nausea. Onset of Local Pain.

5. Two days ago, Swelling reappeared.

Persistence of Pain.

The general health has been good; he has had no other illnesses.

On examination.

The general physical condition is good.

Intelligence is average.

Locally there is^a/rounded swelling in the Right Inguinal Region, over the line of the Inguinal Canal, passing obliquely down over the Inguinal ligament towards the Scrotum. (See Diagram).

There was no visible impulse on coughing.

On palpation, following the Right Spermatic Cord up towards the Inguinal Canal, the examining finger meets the swelling, but can not get above it. The Right Testicle is not in the Scrotum, and while it can not be clearly defined in the soft swelling, the lower part of the swelling is firmer, and pressure over this firmer area causes him to wince. It may be assumed that the Testicle is lying in the lower part of the hernial swelling, concealed by surrounding tissues. The greater part of the swelling is soft /

soft. The swelling is irreducible.

No impulse is felt on coughing, or straining.

Tapping the swelling, and feeling for a fluid wave, suggests the possibility that there may be fluid present, though the main mass of the swelling is undoubtedly solid.

The swelling is not translucent.

The corresponding structures on the opposite side were examined and compared. On the left side, the Testicle was apparently normal, and descended. There was no demonstrable herniation on the left side.

Other hernial sites were examined, and no abnormalities found.

The abdominal musculature is well developed. There have been no symptoms referable to digestive trouble, apart from recent nausea, with the pain. There has been no vomiting.

The bowels are said to act regularly, daily.

There is no abdominal distension, tenderness, or rigidity.

The teeth are artificial.

The Tongue is furred, but moist.

The Cardiovascular and Respiratory Systems were examined. There were no symptoms, and no abnormal physical findings.

Urine/

Urine examination.

Reaction to Litmus: Acid.
 Specific Gravity: 1015.
 Colour: Lemon.
 Sugar (Fehling's): Negative.
 Albumen (Salicylsulphonic acid): Negative.
 Slight Mucus deposit. Free from Blood or Pus.

There was no contraindication to operative procedure.

Provisional Diagnosis.

The local examination, at the site of the swelling, which is mainly above the Right Inguinal Ligament, and which points obliquely towards the Scrotum, and which discloses a palpable mass within the Inguinal Canal, suggests a diagnosis of

Right Indirect, or oblique, Inguinal Hernia
 together with a condition of

Undescended Testicle, on the same side.

The two conditions are associated, and their relation and causation will be discussed later.

The local swelling, however, is of such a size as to suggest that the swelling consists of more than testicle and hernial content, and the possible aetiological factors are discussed under "Differential Diagnosis".

Pre-operative Treatment.

9/1/35/

9/1/35. H.I. Atropine gr. $\frac{1}{100}$.

and Nembutal gr. \overline{iii} at 12 noon.

Operation. 9/1/35. 12.30 p.m. Mr. Chiene.

Ethyl-Chloride and Ether Anaesthesia. 40 Minutes.

A skin incision of 3 ins. in length was made over the swelling, passing above the Inguinal Canal, directly over the Subcutaneous Inguinal Ring and medially and downwards crossing the Inguinal ligament in the direction of the Scrotum (see Diagram). The incision lies in the long axis of the swelling. The incision was carried through a thick superficial fatty layer. The Anterior Wall of the Canal was incised, and the hernial swelling was encountered. The deeper structures showed evidence of oedema.

Pathology demonstrated.

There was a large hernial swelling occupying mainly the Inguinal Canal and extending medially and downwards outwith the Canal. Veins coursing over the swelling were enlarged and varicose.

An incision was made through the coverings of the hernia in the proximal portion of the swelling, the bleeding points being tied off with catgut sutures. Fatty omentum, very adherent to the Cord structures and the walls of the sac, was delivered through the incision. The sac contained no/

no bowel.

Method of dealing with the Sac, the Sac contents, and the Testicle.

The proximal part of the divided omentum was sutured with catgut and returned to the abdomen. The Neck of the Sac was exposed, freed, ligated, and divided.

The whole of the Sac and its omental content was removed.

The Testicle was isolated, and the Cord structures examined. It was decided to attempt to bring the Testicle down into the Scrotum. The lower pole of the testis was transfixed with catgut Sutures which were taken through the wall of the Scrotum and through the Antero-medial aspect of the upper end of the R. Thigh, the effect being to draw down the testis into the scrotum, and to maintain it in position, by pulling on the cord and vessels.

Closure.

The Anterior Wall of the Canal was reconstituted with Catgut Sutures. The deeper fascial layer of the Abdominal wall was united with a continuous catgut suture. The skin edges were approximated with horse-hair sutures, without the use of clips. The wound was not drained.

Post/

Post-operative Treatment and Progress.

<u>Date.</u>	<u>Day</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>
6.1.35.		98°	88	20	1 on admission.
7.1.35.		97°	76	20	2
8.1.35.		98.4°	84	22	1
9.1.35.	1.	99.2°	88	20	0 operation.
10.1.35.	2.	97°	76	20	1
Thereafter		98°	76	20	

Was on 4 hrly. chart till 3rd day. Slight Post-operative Reaction. Temp. was 100° at 11 p.m. 9/1/35.

9.1.35 (Day 1). H.I. Heroin. gr. 1/12 at 3.25 p.m.

H.I. Heroin. gr. 1/12 at 10.10 p.m.

H.I. Heroin. gr. 1/12 at 11.45 p.m.

10.1.35. Flatus Enema. (H's Soln, Glycerine Water, and Aq. Menth. Pip.).

11.1.35. Dose of Castor Oil.

12.1.35. S. and W. Enema. Vegetable Laxative I.

Following the operation, for 2 days there was considerable local pain. This was thought to have caused nausea and vomiting during this time. Pain and discomfort was aggravated by a cough.

Mist. Ammon. Carb. in tablespoonful doses was given 4 hrly.

On/

On the third day there was freedom from pain, and vomiting and nausea had ceased.

A haematoma formed around the wound, which was padded with a cotton-wool pad, and a tight T Bandage, together with a many-tailed bandage was applied. The wound was dressed daily and healed well.

15.1.35. Cough worsened, and muscular straining pulled on the wound, and caused transient nausea.

He vomited clear material.

The Stomach was not dilated.

The expectorant cough mixture was continued.

16.1.35. et seg. Freedom from pain and nausea. Cough subsided. Wound was clean.

General condition satisfactory.

19.1.35. On tenth day - The stitches were removed from the Inguinal wound, which was clean and firmly united.

The catgut suture holding the testicle in the scrotum were retained in situ, to be left till absorbed and severed naturally.

20.1.35. Progress maintained, No cough.

25.1.35. Allowed up.

26.1.35. Discharged on 16th day. To Report when the Catgut suture divides.

30.1.35. Patient reported. The Catgut sutures had separated./

separated. The skin of the Scrotum and Thigh had healed, the testicle was in the Scrotum, and the Inguinal wound was firm, and healed.

No further information has been obtained as to ultimate progress. Patient has not reported again.

Case Commentary.

There are several aspects of this case worthy of consideration.

In the differential Diagnosis, while it was clear that the R. Testicle was undescended, there was some doubt as to the nature of the swelling. As to the swelling, it had to be decided.

1. Whether the swelling was due partly or wholly to an undescended Testicle.
2. Whether there was a hernia present, and if so what was the type of the hernia - whether Direct or Indirect.
3. Whether any condition of the Cord existed, adding to the Swelling.

The swelling appeared larger than could be accounted for by an ectopic or undescended testicle. There was little doubt that the Testicle lay in the distal portion of the Inguinal/

Inguinal Canal.

Causative conditions to be considered were (in addition to undescended testicle)

1. Indirect Inguinal Hernia, with omentum in the Sac.
2. Hydrocele of the Cord.
3. Direct Inguinal hernia.
4. Lipoma of the Cord, or other Cord Condition

of these possible causes, that of indirect Inguinal Hernia is the most probable, owing to its frequent association with undescended testicle. The question of strangulation of bowel has to be considered, especially as in this case where the hernia suddenly becomes irreducible, and where nausea is present. The content of the sac gave none of the physical signs as would be given by contained bowel.

The question of a double herniation on the same side has to be kept in mind - i.e., an oblique and a direct inguinal hernia on the same, or an inguinal and a femoral hernia occurring on the same side. Such an occurrence would give an unduly large swelling, but could be differentiated as both swellings would not be firm and irreducible at the same time, and an impulse on coughing would be expected in one or other hernia. Moreover, the examining finger should be able to differentiate the two. Such cases of combined herniae are not common, and are of interest when they/

they occur, and different varieties have been reported. A Littre's and a Richter's hernia have been known to co-exist in a single femoral sac. ¹. A case is also recorded in which a direct and indirect inguinal hernia existed on the same side, there being an ordinary indirect or "external" hernial sac following the course of the Inguinal Canal on the Right side, 2 ins. in length, and quite distinct from this an internal hernial sac $1\frac{1}{2}$ ins. long. There was also a hydrocele on the same side. ².

The recognition of the possibility of such a combination of hernial defects in a single swelling has been now recognised for almost a century. Teale ³ quotes Lawrence's Statement (1838) that an Internal and an external hernia may co-exist on the same side. Chiene.J. ⁴ reviewed this aspect of hernia, and described such a case of double hernia on the same side of the body.

The provisional diagnosis in this case was of a Right Indirect Inguinal Hernia with undescended testicle, and the acute symptoms were of intense local pain and nausea. There was no actual evidence of bowel obstruction but there was an increase/

1. Sinclair, N.F. "An Unusual Hernia". Lancet. 1922 (2) P.762.
2. Stiven. H.E.S. "A Note on Direct and Indirect Hernia on the same Side". Lancet. 1922. (2) p. 763.
3. Teale. "On Hernia". 5th Edn. (1846) p. 237.
4. Chiene. J. "A Case of oblique and Direct Inguinal Hernia occurring on the same side of the body". Edin. Med. Journ. March 1869.

increase in size of the local swelling. Strangulation of the contents of the hernial Sac has been considered. An acute testicular condition, such as torsion of the testicle might explain these symptoms, and had to be eliminated in diagnosis. Such a condition is again a rarity, but a case of strangulated Inguinal Hernia complicated with Torsion of an undescended testicle has been described as occurring in a youth of 19, the symptoms being pain, fainting and vomiting, and the local signs being a swelling, the size of a hen's egg in the Right Inguinal Region, which was tender and oedematous. ⁵.

It is a fact that the undescended testicle is more liable to malignancy, but such a condition, while being distinctly rare, would not account for sudden increase in size as was experienced in this case.

Operative Treatment was called for, and the true state of the pathology present was revealed. The great thickness of the tissues was responsible for the unusually large swelling present. Lipoma of the Cord was suggested, along with hydrocele, as a possible complication in this case. Lipoma is apt to be overlooked, but that its presence may strongly simulate a hernia is well known, and such/

5. Wakeley. C.P.G. "Case of Strangulated Inguinal Hernia complicated with Torsion of an Undescended Testicle". Lancet. 1922. (2) p. 1067.

such a state is sometimes determined Post-mortem or at operation - e.g. Specimen A.A. 3. (Macewen Collection, Glasgow).

The fact that imperfect descent of the testicle is often associated with Indirect Inguinal Hernia raises the point as to why this should be so, and it has to be decided how far the present condition is due to an original developmental deficiency. While there still exists a diversity of opinion as to the origin of hernia - it has been suggested that the majority of Inguinal Herniae have no congenital origin ⁶ - Hamilton Russel's theory of the pre-formed Sac is generally accepted.

During the last month of intra-uterine life the genital gland passes the corresponding kidney region towards its scrotal position. The cause of undescended testicle is still a matter of controversy, and since the mechanism of testicular descent is still a matter of dispute. It is often assumed that the genital gland is drawn down in the second stage of descent from the internal Ring to the Scrotum - by the action of the contracting gubernaculum, but it has been demonstrated ⁷ that the gubernaculum exerts no traction on the testicle in the second stage, but that descent/

6. Hutchinson. J. "Hernia and its Radical Cure". 1923.

7. Hunter. R.H. "Aids to Embryology". p. 137.

depends on the forcing out of the testicle from the abdomen, by increasing the intra-abdominal pressure, due to the development of the splanchnic Viscera. In this particular case, the testicle has completed the first part of its descent, has passed the internal Ring, but while it has left the abdominal cavity, it has been grasped by the wall musculature and held there. The cause for its failure to descend further cannot be stated with any certainty.

On the other hand, there is no doubt that the undescended testicle has been the harbinger of the present complaint. While the hernia might have developed also if the testicular descent had been complete, the imperfect descent has predisposed strongly to the occurrence of herniation. The descending testicle has brought down with it a process of peritoneum which has failed to close off to form the Tunica Vaginalis Testis. This unobliterated process constitutes a preformed hernial Sac, into which peritoneum or bowel can enter. The question of the fluid content of the swelling was of interest, as a tunica Vaginalis might have been present, containing an excessive fluid secretion.

The Sac contained omentum only - an epiplocele. The adherent Structures were due to the wearing of a truss, and to previous operation. The nature and purpose of the initial/

initial operation is still in doubt. The original pathology of hernia and undescended testicle had not been benefited. Genital function was normal.

The question of treatment of the undescended testicle depended on the conditions found at the time of operation. It had to be decided whether the testicle should be removed, or preserved in situ, or caused to descend. Procedure depended on

1. The condition of the testicle, whether normal, atrophic or the site of malignant change.
2. Whether the Cord structures, especially the vessels, allowed of sufficient stretching to lower the testicle to its normal position.

The circumstances were favourable in this case, and Testiculopexy was carried out after the herniotomy had been completed.

Apart from the intra-abdominal position of the undescended testicle, the sites of arrest are Inguinal and subinguinal, the positions in the latter variety being Pubic, Superior Scrotal, or interstitial, and it has been suggested that the gubernaculum has an influence by exerting traction on the testicle. In this case the testicle may be considered as Inguinal in position, which is the finding in 2/3rds of the cases of undescended testicle. There is

2% incidence of the condition, and this case represents the commonest side, as $\frac{1}{2}$ of these patients have the condition on the Right Side, as against $\frac{1}{4}$ on the left only, and $\frac{1}{4}$ bilateral.

The undescended testis is a condition requiring treatment, and as maldescent has been ascribed as the cause of hernia, of torsion, strangulation, trauma, tumour, and inflammation of the testicle, and an element in the aetiology of neurasthenia. It has been observed that at birth the retained testis approaches the normal, but the older the child the more apparent are the degenerative changes. The further the descent has progressed the more normal is the function. As puberty is approached various changes are noted: fibrosis occurs and there is both an apparent and actual disappearance of tubules while the spermatogonia remain quiescent.⁸ It has also been noted that along with the appearance of fibrosis about puberty, evidence of spermatogenesis, or at least of activity is to be found. In later life there is much fibrosis and no signs of spermatogenesis.⁹

It is agreed that after puberty the interstitial cells of the Testis and the supporting cells of Sertoli of the Tubules are, as a rule, well developed. Spermatogonia may be/

8. Southam. A.H. and Cooper E.R.A. Lancet. 1927. (1) p. 895.

9. Vines. H.W.C. Journ. Path. & Bact. 1935. xl. p. 161.

be present, although in diminished numbers, or may be absent. The modern view of function is that in bilateral cryptorchids there may be a short lived production of spermatogoa at, and a few years after puberty, but that later these disappear. The internal secretion is undoubtedly produced in the great majority of these patients, although in bilateral cryptorchids a condition of infantilism has been observed, and the testes may be atrophic ¹⁰. As in this case, the unilateral cryptorchid is normal as regards sexual life, and is fertile.

Complications liable to occur in this type of case may be given as reasons for operation, and will be considered briefly. Hernia has complicated this case, and this alone is sufficient justification for operative measures. In these cases the processus Vaginalis, is, as a rule, but not invariably, patent - so that a state of actual or potential hernia, with its possibilities, exists. It is said that the undescended testis is never anatomically perfect, and that a very definite mesentery or mesorchium often unites the Testis and epididymis, producing a resemblance to an ovary with its mesosalpinx. ¹¹.

Torsion of the Spermatic Cord, which, it is stated, never/

10. Felizet. G., and Branca. A.

Journ. d'anat. et de physiol. 1898.
xxxiv. p. 589.

11. Bland-Sutton. J. Practitioner. 1910. lxxxiv. p. 19.

never happens in a normal organ, may occur, and it has been observed ¹² that 60% of cases of Torsion had taken place in patients with undescended testes. Strangulation of an undescended testis suddenly forced by effort into a tight Inguinal Ring has been observed as one of the rarer complications.

An undescended testicle gives an increased liability to Gonorrhoeal and Tuberculous epididymitis, leading to chronic inflammatory change and tendency to adhesions, and also to the possibility of general peritoneal infection, owing to the existing anatomical Relations. The Inguinal type of undescended testicle is, owing to its lesser degree of mobility, subject to repeated minor trauma, leading to inflammation, and the possibility of malignant change which in man is equally likely to supervene in the Inguinal as in the abdominal type of testicle. ¹³.

Psychic disturbance, particularly in the nature of Naurasthenia may result from the condition. There was a slight element present in this case, and operative results were accompanied by brighter mental outlook. The main reasons for operation/

12. Uffreduzzi. O., Gior. d. r. Accad. de med. di Torino. 1910., xvi. p. 36., and Arch. f. Klin. Chir. 1913. p. 1151.

13. Hobday F., Proc. Roy. Soc. Med. 1923-4 xvii. p. 3.

reasons for operation lay in the local defect, especially in the coexisting hernia, and the liability to trauma.

The chances of unaided descent were non-existent in this type of case, although cases of spontaneous descent have been recorded.¹⁴ While recent work in the effect of hormones on the undescended testicle has had positive results in adolescents,¹⁵ and experimentally in monkeys,¹⁶ hormones would be useless in this case. The only type of case in which hormone therapy may be reasonably applied would be in a case, before puberty, with the testicle in a subinguinal position,¹⁷ although it is not known whether an induced descent would abviate the development of a hernia.

The operation done in this case was a combined Inguinal herniotomy and Right Orchidopexy. I have seen a similar, but bilateral operation carried out in a boy of 14 yrs. with equally good result. The operation differs from other operations designed to effect the same purpose, mainly in the manner of anchoring the testicle, which in this case was by suture to the thigh. Bevan's¹⁸ methods of fixation are of the/

14. Coley. B.L. Ann. of Surg. 1908. xlviii. p. 321.

15. Shapiro. B. Deutsche. Med. Wehnschr. 1930. 56: 1605.

16. Engle. E.T. Endocrinology. 1932. 16: 513.

17. Spence. A.W., and Scowen. E.F. Proc. Roy. Soc. Med. 1935. xxviii p.427

18. Bevan. A.D. Journ. Amer. Assoc. 1903. p. 718.

the testicle to the base of the scrotum by a purse - string suture, or to the thigh by suture through the Tunica Albuginea, and Scrotum. In this particular case the suture passes through the substance of the testicle. Bevan's method is more suited to the subinguinal type of testicle.

Walther & Ombrédanne¹⁹ have modified the method by fixation and transplantation of the testis to the other side of the scrotal septum. In cases in which the Transplantation method was impracticable, the more radical Keetley - Torek operation - which involves a full exposure of the inguinal canal, freeing of the Testis, the Cord, and the Processus Vaginalis, and freeing of all adhesions from the Cord - was advised. By this method a 70% success in a series of cases has been recorded,²⁰ while in a series of 35 cases, all were successful.²¹ The operation carried out on this case resembled this procedure, and in addition satisfactory fixation was obtained, with a good end result. Conditions were favourable for such fixation as the vessels were sufficiently long, when freed.

The aim of the operation was achieved. Previous operation had had no permanent effect on either the hernia or the testicular condition. Hormone therapy is, as yet, of little use in these cases, and surgical aid cannot be dispensed with. There is no hard and fast method in operative technique, the

19. Walther. Cong. franc. de chir. 1906. xix. p. 759, and Ombrédanne L.

Presse. Méd. 1910. xviii p. 745.

20. Paschen. R. Zentralbl. f. Chir. 1923. l. p. 1440.

21. Meyer. H.W. Surg. Gyn. et Obst. 1927. xliv. p. 53.

the procedure largely depending on the age of the patient, the original position of the testicle, and the nature of the structures involved. Herniorrhaphy should prevent any recurrence of a hernia, and the testicle after a period of fixation should remain permanently in its scrotal position.

Summary. A case of undescended Testicle, with an oblique Inguinal Hernia, on the same side of the body, is described. The Hernial Sac contained adherent omentum. The condition was successfully treated by Herniotomy and Orchidopexy.

NEUROPTICOMATOSIS.

Patient's name: David Fraser.
Age: 33 years.
Address: 25 Eversham Road,
Trenton.
Occupation: Railway Stationer, at Trenton, Maryland,
and living at Trenton, N.J.

Medical Attendance: C A S E V.

Admitted, Name: DAVID FRASER
Examined: 10/1/12

Present complaint - which has all its origin in a slight injury,
and which resulted in the development of the following condition:

- NEUROFIBROMATOSIS.
1. Weakness
 2. An increase in size
- a large pre-existing tumor on the left hand.

Case History:

While the patient's complaint is directed to disturbances
of a slight finger injury, which is known to be responsible for
the present condition, the history of the local condition can
be re-traced over a period of many years. The history of the
general abnormality, and of the patient's condition in the present
condition is as follows:

Ever since childhood - in fact, as early as 1881 - and,

Patient's name: David Fraser.
Age: 39 Years.
Address: 25 Harkness Crescent,
Tranent.
Occupation: Railway Platelayer, at present unemploy-
ed owing to lack of work.
Medical Attendant: Dr. Hunter,
Bridge Street,
Tranent.
Admitted, Ward 12. 7/1/35.
Examined. 8/1/35.

Present complaint - which led him to seek medical advice,
and which resulted in his admission to hospital - is

1. Weakness of the middle finger of the Left Hand, and
2. An increase in size of, following a slight injury to,
a large pre-existing palmar swelling of the Left Hand.

Case History:

While the patient's attention is directed to circumstances
of a slight finger injury, which he thinks is responsible for
the present condition, the history of the local condition can
be re-traced over a period of many years. The history of the
general abnormality, and of the factors leading to the present
condition is as follows:-

Ever since childhood - as long as he can recall - and,
as /

as he is aware, from birth, his left hand has been swollen. As far as he knows, the swelling has grown proportionately to the growth of the hand. Moreover, the swelling had remained confined to the Radial side of the Volar aspect of the hand, overlying the Thenar eminence and bulging into the interdigital space, between the thumb and the index finger.

On the palm, the swelling overlay the First and Second Metacarpals (See Diagram ✓ 8.). It had always been a soft swelling, and always painless. The swelling at no time inconvenienced him, and he was never treated for the condition. Finger movements were said to be free, but while the hand could be used normally in his employment, he considered the hand to be weaker than the Right hand.

The nature of the injury to which patient attributes the increase in size of the palmar swelling was as follows. The injury was sustained on 29/11/34, 9 days before admission, while bolting a door. He was attempting to push a sliding bolt in a bathroom door, and to do this he applied force by pressure with the terminal Phalanx of the Left Middle finger. At the time, his wrist was extended, as were also the fingers. He applied considerable force, and the bolt was driven in suddenly. The continued force of the hand and finger, applied as the bolt stopped, caused the middle finger to be hyper-extended /

extended, or even displaced backwards. Patient is habitually 'loose jointed', and he felt that the metacarpo-phalangeal joint had been affected. It seemed as if the finger had "come out of joint". There was pain in the joint region, and an attempt was made by flexion and rotation of the whole finger, to replace the bones in normal apposition, thus to allow of normal finger movement. Since the injury, patient thinks there has been a slight degree of limitation of flexion of the affected figure.

On the following day - 8 days before admission - it was noted that the old-standing swelling of the hand had suddenly increased considerably in size. It was now more than twice its former size. It extended over the greater part of the palm. Pain continued in an area not over the part which superficially appears to be the base of the finger, but in the hollow between the "base" of the finger and the edge of the palmer swelling. Joint movement remained impaired, and was painful; imperfect flexion was noted. The joint pain, the finger weakness, and the sudden increase in size of the hand swelling, led him to seek medical advice the following day.

On 31/12/34, his doctor examined the swelling, and attempted to aspirate it. No fluid could be withdrawn. The hand was /

was then tightly bandaged for five days. At the end of this period there was no alteration in the swelling present.

His doctor thought the swelling to be a Lipoma, and sent patient to S.O.P.D. for examination and treatment of the swelling. Three days later he was admitted to Ward 12, at a time when the joint pain was less severe, and the swelling was of the same size but less tense.

On examination: There is a large, visible tumour of the palm of the left hand. This swelling, which was said to have increased considerably in size following the digital injury, is circular in outline. It fills the whole palm, and bulges between the thumb and the index finger, and the sleft between these digits is abnormally wide. On widening the gap between the thumb and first finger, the tips of the digits span a length of $7\frac{1}{2}$ inches.

The swelling overlaps the Thenar eminence and obscures it. On the ulnar side it extends to, but does not wholly cover, the hypothenar eminence. Distally it extends approximately to the levels of the metacarpo-phalangeal joints, while proximally it almost reaches the level of the Transverse Carpal Ligament. (See Diagram V.1.).

The swelling is soft to the touch, readily mobile, subcutaneous, and not adherent to deeper structures. It is painless /

painless on handling; there is no local heat - no sign of inflammatory swelling or oedema. There is no fluctuation elicited.

The swelling is not translucent.

The swelling is apparently not defined, nor encapsulated; nor is it lobulated, though the skin depressions are exaggerated. The skin covering is unduly loose in all areas, and there is no obvious suggestion of there having been a sudden increase in the size of the tumour.

The Condition of the Middle Finger was next investigated.

No abnormality was detected on inspection.

There was some interference with movement, for while the digit could be readily extended, difficulty in flexion was experienced, particularly was lack of flexion of the ungual phalanx noted.

Tenderness on pressure was elicited over the middle metacarpophalangeal joint. There was no undue mobility determined.

The muscular power in the finger was compared with that of the other fingers and of the corresponding finger of the Right hand. There was a degree of muscular weakness present in the finger, and to a lesser degree of the fingers of the left hand. The movement and power of the affected finger were tested daily. Three days following admission there was a decided improvement both in mobility and power of the middle finger /

finger, although neither was of a normal standard.

The Left Forearm was examined, and this showed a striking variety of swellings. The swellings were almost entirely confined to the distal half of the Volar aspect of the forearm.

There were three main elevations running transversely across the forearm, the most distal of these being in proximity to but not continuous with the Palmar Swelling.

All the swellings were very soft on palpation; and painless.

They correspond to the palmer swelling in that they have been present throughout life. They have been constant in their relative size, and have not been subject at any time to sudden enlargement.

Recent changes in the palmer swelling have not been reflected in the behaviour of the forearm swellings.

In the centre of the middle swelling there is a defined pigmented area. In the most proximal swelling there is again pigmentation of a purple colour, and surface vessels are prominent. In the centre of the pigmented patch there is a tuft of hair growth.

There is no evidence of fluid within the swellings.

Cubital and axillary glands are not enlarged or palpable.

Further examination of the Left Forearm revealed the presence of small, rounded lumps in the superficial layer, and this led to /

to an examination of the whole of the surface of the Body, and a curious generalised condition was thus demonstrated.

There is present a condition manifested by numerous lumps, widespread over the body. In duration they bear no relationship to the hand and forearm swellings, as they are of more recent origin. These lumps began to appear in 1918, after the termination of the War. They were first noted on the forearms, and spread over both arms on to the chest, and from the chest spread to the face, the back, the abdomen and lower limbs.

At the present time they are irregular in their distribution. They are rare on the forearms, and vary in size from a pea to a hazel nut. They are more numerous on the arms, and show a variety of forms. These are indicated in the accompanying diagrams.

They range from minute darkly-pigmented nodules to larger, pale, lobulated and irregularly pigmented swellings. They are invariably extremely soft to the touch.

They tend to be small and inconspicuous. Those overlying the The Chest and Abdomen show numerous nodules of average size, and mainly of the pale variety.

The back is covered with an array of nodules of varying size and shape. One small brown nodule is definitely pedunculated, and as such is the only one of its kind. Some of /

of the swellings are lobulated, and pale, some umbilicated, and some show purple discolouration towards their apex, rather than true pigmentation. Some of the lumps are said to contain a core which can be expelled by pressure. There is no skin scarring.

The number of nodules is said to be increasing rather more rapidly of late. The nodules have mainly a central distribution being less common on the extremities, gradually less and less in number towards the distal end of the limbs, and absent from the palms of the hands and the soles of the feet.

The largest swelling - apart from the palm and forearm, is in the region of the Right knee, and is of the rounded and pale type. Those on the dorsum of the feet are hardly discernable, being flat, and pale.

There are numerous small nodules around the nipples, and in the areolae.

There is an irregular crop of nodules on the Face. The distribution in this region is indicated in the diagrams. They tend to be small and inconspicuous. Those overlying the edge of the mandible have been frequently cut, and bleed freely when incised.

There is a solitary small nodule on the scalp, and it is not covered by hair.

Mucous Membranes appear to be unaffected.

Owing /

Owing to the possible association between the Superficial nodules and tissues of peripheral nerve branches, the Central Nervous System was systematically examined, particular attention being paid to the nature of the peripheral nerves, by palpation where possible. No thickening or nodularity could be detected e.g. in the Ulnar nerve, Facial and Axillary nerves. There was no visible nerve thickening.

He has not experienced pains of primary nerve origin.

Patient is temperate in his habits.

There is no evidence of local or peripheral neuritis.

There is no abnormality of the Cranial Nerves noted.

The Pupils are equal and react to Light.

Apart from the Left hand weakness, muscular development and activity is fairly good. Patient is Right handed.

<u>Reflexes.</u>		<u>L.</u>	<u>R.</u>
Biceps.		x x	x
Wrist		xx x	x
Abdominal.	Superior.	x	x
	Inferior.	x	x
Knee Jerk.		x	x x
Ankle.		x	x
Plantar.			↓

Left Plantar Response not elicited owing to anatomical defect in Left foot.

The Family History is negative for similar complaints of nodules or swellings.

There are no alimentary symptoms. The bowels are said to act regularly daily. The teeth are satisfactory.

The tongue is furred posteriorly.

There are no Respiratory symptoms. No cough.

No abnormal chest physical signs were demonstrated.

Cardiovascular System is satisfactory from point of view of operative procedure. Pulse 76.

NO Cardiac lesion is present.

Blood Pressure is within normal limits, and not raised.

The Urine is Acid in Reaction, and free from abnormal constituents.

In the course of the examination of the body surface, it was found that the toes of the Left Foot had been amputated. The cause of this which had no relation to the present complaint, was a condition of frost-bite, during War service, as a result of which the first and middle toes of that foot became gangrenous, and dropped off spontaneously. The remaining toes were also gangrenous, and became flexed, withered and dark in colour. This occurred in 1918.

In 1924, Mr. Mercer amputated the remaining toes at the metatarso-phalangeal joints, and made a skin flap which has given /

given the distal end of the foot a smooth, rounded appearance. A special block is inserted into his boot, and is worn in order to maintain the foot, as a whole, in position.

There is no palpable neuroma at the site of the amputation. There are, however, smooth, flat, pale, circular swellings on the dorsum of the foot, mainly on the lateral aspect, and also on the lateral aspect of the ankle, posterior to the peroneal tendons. Movement of the ankle is unimpaired, and he is able to walk normally.

The thumb of the Left hand was found to be capable of hyperextension, while this could not be demonstrated in the Right Thumb.

Pre-operative Treatment.

10/1/35. Day before operation - diet was reduced, and Castor Oil was given in the afternoon.

11/1/35. Operation Day. S. and W. Enema.

Nembutal gr. III. at 9.45 a.m.

Nembutal gr. III and

H.I. Atropine gr. 1/100 at 10.40 a.m.

The Left hand, together with the whole forearm, was cleansed with ethereal soap, dried, given an application of Blue Dettol, and wrapped in sterile squares.

11/1/35. /

11/1/35. Operation. 12 noon. Mr. Pirie Watson.

Duration 70 Minutes.

Anaesthetic: Ethyl Chloride induction, then

Ether and Oxygen throughout.

Nasal tube airway inserted owing to Respiratory difficulty.

As a preliminary to operation, the Left arm was elevated, and a Bier's elastic Bandage was wound tightly around the arm, from the hand upwards in an attempt to force the blood from the limb. A Foulis' tourniquet was applied tightly round the arm, and the elastic bandage then removed. The hand and forearm were then cleansed with spirit.

1. Excision of Nodule from the Dorsum of the Forearm.

For purposes of investigation and diagnosis, a typical round nodule was excised from the dorsum of the forearm. An incision was made round the nodule, being carried through skin and superficial fascia, and the nodule was readily excised. It was found to be rounded, and greyish in colour, and was sent for histological examination.

Four interrupted Silk-Worm Gut sutures were used for approximation of the skin edges.

2. Removal of Tissue Mass from the Forearm.

A straight, elongated incision was made on the Radial side of the Volar aspect of the forearm. (See Diagram). It was carried through the skin and superficial fatty layer. The wound edges were retracted, and a tissue mass was dissected

from off the superficial tissues and the deeper structures.

The mass was of a fatty nature, and there was a free network of vessels on the exposed surface of the mass. Locally, particularly towards the proximal end, the tumour contained large vessels coursing over its substance. Little bleeding occurred in removal of the tumour owing to the action of the tourniquet.

The tumour was not capsulated, and at first sight, the appearance was suggestive of an angiomatous structure. It was dissected and freed from the underlying tendons of the Flex. Digit. Sublimis muscle. Bleeding points were secured with forceps, and the vessels tied off with catgut ligatures. On removal of the mass the cavity was swabbed, and the skin approximated with a double row of continuous horse-hair sutures

3. Excision of Palmar Swelling.

With the closure of the forearm wound, the hand swelling was next dealt with.

An incision, continuous with that of the forearm, was made, extending and curving over the Thenar eminence to a point opposite the base of the index finger. Bleeding points were secured. A large fatty tumour was exposed, and this, while not being encapsulated, was fairly readily freed from the skin and from the underlying musculature. A guide in the separation from the skin was the skin itself through which the blue stain of the Dettol could be seen.

This tumour, examined naked-eye, differed from the forearm

tumour in being less vascular, and being greyer and firmer - suggesting more a fibrous tissue element rather than an angioma. The tumour appeared to be divided from the Palmar fascia, and might be said to be of a fibro-lipomatous nature. The mass was freed from the tendons of the first and second digits and from the Thenar muscles. The tendons of the Flexor Sublimis and profundus muscles, going to the Index and Middle figures, were tested. Some slackness in the tendon going to the middle finger was demonstrated, but the tendon was not interfered with, as no injury to the tendon was visible in the palm.

On removal of the tumour, and when all obvious bleeding points were tied off, the skin edges were approximated by a continuous horse-hair suture.

Both the forearm and palmar tumours were sent for histological investigation. The part was covered with sterile swabs, and cotton wool and a tight bandage applied. Cotton wool was inserted between the fingers, and the finger tips exposed. The forearm was elevated on a pillow, on return to bed.

The tourniquet was removed.

Post-operative Treatment and Progress.

<u>11/1/35.</u>	Nembutal	gr. III.	and
	H.I.Heroin	gr. 1/12	at 4 p.m.
	H.I.Heroin	gr. 1/12	at 11.10 p.m.

12/1/35 /

12/1/35 Haemostatic Serum. 3 c.c.s. at 5.15 a.m.

Following operation, T. P. and R. were recorded four hourly. There was a sharp reactive post-operative rise in Temperature to 100° , and on the following day to 101° . Temperature was swinging.

13/1/35. Intense local pain caused loss of sleep.

14/1/35. 3rd Day.

The part was dressed for the first time, and was painful, throbbing, and had caused the patient to be restless and sleepless. The dressing was removed with the aid of a hydrogen peroxide spray, as there had been considerable bleeding. There was a slight ooze of dark blood from the forearm incision.

The forearm and hand were both very swollen. One suture in the forearm incising was cut, and sinus forceps introduced. Old blood was released. A rubber dam drain was inserted. A similar procedure was carried out for drainage of the hand swelling.

Drainage brought relief from pain ~~within~~ in a few hours, and allowed of sleep the following night. The temperature dropped.

15/1/35. 4th Day.

The part was again dressed. Much old blood had drained since the previous dressing. The swellings were softer and slightly reduced in size. Drains were again inserted.

Temperature /

Temperature settled, and was no longer swinging. The pulse was slower.

17/1/35. Triple Tablets Grs. X. at 12.30 a.m.

The part was dressed, and was generally less painful, the part causing greatest pain being at the site of removal of the nodule from the dorsum of the forearm.

There was numbness of the Index finger.

19/1/35. Part dressed and cleaned up with spirit.

Part still very swollen, but less painful. Slight ooze of old blood.

Allowed up.

21/1/35. Part dressed. Haemorrhage had occurred. Old blood exuded on pressure; new drains inserted.

The part was painless, except when held in dependent position, and was still swollen. The dressing holds the thumb and index finger apart, and the index finger tends to be numb. The thumb is hyperextended.

24/1/35. The part was dressed; cleansed with spirit and covered with dry gauze swabs. There was some oozing of blood, and the part was still very swollen. The skin over the forearm and hand swellings had broken down in one or two places, and blood oozed through the openings.

27/1/35. The thumb is stiff and painful.

With /

With Novocaine as a local anaesthetic, two nodules were removed from the back.

A typical soft, rounded, nodule, slightly pigmented, was excised, and the wound edges approximated with two S.W.G. sutures.

A small pendunculated, brown nodule was snipped off with scissors, and required no sutures. Both nodules were sent for Histological investigation.

28/1/35. 17 Day.

The stitches were removed from the hand and forearm wounds, and from the small wound on the dorsum of the forearm. The sutures were allowed to remain in position for 17 days on account of the skin being stretched by underlying swelling. The swellings have been larger and more tense than the original tumour swellings, and this has retarded wound healing. Blood continued to ooze after removal of the stitches. Tight dressings had to cover the swellings, and the bandages pulled on and immobilised the thumb, causing its stiffness and discomfort.

31/1/35. The part was examined. There is still considerable swelling of the hand and forearm. A portion of skin between the thumb and index finger was found to be undergoing necrosis, and was cut away, leaving a gap in the skin which was packed with a Eusol swab, and a dry dressing applied.

1/2/35. Discharged from hospital. The part was again dressed /

dressed. There was still stiffness and pain of the thumb, and, to a lesser degree, of the index finger. Middle finger flexion remains restricted.

Patient was to attend his own doctor for dressings, and was to report in 5 days time.

	<u>Day.</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>
Jan./ 7/35.		97°	76	20	1 (on admission (veg. lax.
8		97°	84	20	
9		97.6°	84	20	
10		97°	84	20	C. Oil.
11	1	100°	<u>96</u>	22	S. & W. Enema.
12	2	<u>101°</u>	<u>100</u>	24	H's Solution.
13	3	<u>100.6°</u>	<u>104</u>	24	Veg. Lax.
14	4	100°	92	24	H's. Solution.
15	5	98.4°	88	22	
16	6	98.6°	<u>100</u>	22	H's. Solution.
17	7	98°	<u>92</u>	22	
18	8	98.4°	<u>96</u>	22	
19	9	98.4°	86	22	Allowed up.
20	10	98°	84	22	
21	11	97.4°	80	20	
22	12	97°	76	20	
23	13	97.4°	80	20	
24 /					

	<u>Day.</u>	<u>T.</u>	<u>P.</u>	<u>R.</u>	<u>Bowels.</u>
Jan./24/35.	14	97°	80	20	
25	15	97.8°	80	20	
26	16	97°	80	20	
27	17	97°	78	20	
28	18	98°	72	20	Stitches out.
29	19	97.2°	76	20	
30	20	98°	<u>92</u>	20	
31	21	97.6°	84	20	
Feb. 1	22	97°	76	20	Discharged.

6/ 2/35 Patient reported. Little local change.

The forearm wound has dried and is healing satisfactorily.
Swellings slightly decreased in size.

The hand wound was still open and discharging.

The S.W.G. Sutures from the small incision in the back
were removed - 10th day. The part was cleansed with spirit
and a dry dressing applied.

General health remains fairly good.

Patient was to report in 3 weeks time.

20/ 2/35. Reported, 20 days after discharge.

The forearm wound had healed well, and the swelling had
slightly subsided.

The /

The hand remained swollen, but soft. The skin had not closed up, between thumb and index finger. The doctor was applying picric dressings daily.

The thumb was still stiffened and painful. The middle finger could not be completely flexed.

There was a 50% stiffening of the Thumb, the Index finger and Middle finger.

17/ 4/35. Reported again, 1 month later.

Both wounds had healed.

The Thumb, Index and Middle fingers were impaired in their use.

The Metacarpal Joint of the Thumb was disorganised, and his doctor considered this an "osteopathic lesion", and also suggested the possibility of an arthritis arising from superficial inflammation.

27/ 4/35. An X-Ray photo of the wrist was taken, and showed Decalcification of all bones.

There was disorganisation of the metacar-pophalangeal joint of the Thumb. There was no bone injury in the 2nd finger.

9/ 9/35. Admitted for a period of 17 days.

The first Metacarpo-phalangeal joint of the Left hand was manipulated. The Thumb was fixed, in plaster of Paris, in a position /

position of flexion and adduction.

15/ 1/36. Reported. There is some improvement in the local condition, though there is some circulatory impairment, and weakness in flexion of the 2nd finger and the thumb. It is noted that small nodules are making their appearance on the skin of the palm of the affected hand. Generally the nodules are tending to increase in number. General health is satisfactory.

CASE COMMENTARY.

The main problem in this case lies in the Differential Diagnosis. This had to receive considerable attention clinically before biopsy and tissue examination was carried out.

The hand and forearm swelling may be considered together, as they are similar in character, and of the same duration. The fact that they have existed throughout life, without relative increase in size indicated their benign nature.

The condition of Compound Palmer Ganglion had to be excluded, as it occurs on this site. The swellings did not fluctuate, nor did they intercommunicate. They had been shown not to contain fluid, and there was no crepitant sensation on pressure.

Cavernous Lymphangioma was also excluded, although there was a suggestion of angiomatous tissue in the forearm swellings. There was only slight pigmentation, and the swellings

were not cystic. The site was unusual for this condition.

The condition was too benign and too soft to be a Sarcoma. There was no glandular involvement of any kind, and this fact also excluded acute inflammation, abscess formation, or cellulitis, being superadded to the original swelling.

With regard to the hand swelling, the issue lay between a simple benign tumour such as Lipoma, fibrolipoma, or Naevolipoma, and a tumour of neuro-fibrous origin - a large neurofibroma. The condition of neuro-fibroma was considered unlikely, at first, on account of its large size, its softness, and mainly on account of its position, these tumours usually avoiding the palms of the hands and the soles of the feet. The general nodular condition gave a clue to the possibility of this tumour being part of a diffuse neurofibromatous manifestation.

Points, which was in favour of this being a simple fatty tumour, were as follows:

The mass was freely mobile, and soft, almost suggesting the presence of fluid. The mass, however, was not definitely capsulated or lobulated, as far as physical examination could determine.

The situation of the tumour favoured its being a Lipoma.

Of all tumours in the subcutaneous layer, and of a benign type, which might remain quiescent, and then suddenly increase in /

in size, the fatty type of tumour is the most likely. Neural tissue tumours do not share this property.

With regard to the forearm swelling, this, too, is suggestive of fatty tumour, being extremely soft. It is to be differentiated from elephantiasis of the limb as might occur in generalised molluscum fibrosum, and no definite neural disorders could be determined in the body. The pigmentation in the centre of the elevations, and the hair distribution over the pigmented hairs suggested a fatty tumour, containing a naevoid or angiomatous element. Alternatively, it suggested a fatty tumour which had changed from a simple lipoma and was becoming a naevo or angio lipoma. However, as the swelling of a neurofibroma may also be soft, pigmented and hairy, a certain diagnosis of the swelling cannot be arrived at, on physical examination. The diagnosis tests provisionally between the conditions of diffuse Subcutaneous Lipomatosis, Fibro-Lipoma, or Neurofibroma.

The Differential Diagnosis of the swellings may be summarised thus:

Hand Swelling.

Lipoma or Fibrolipoma.

Neurofibroma

Naevo-Lipoma Haemangioma

Fibroma (of Cutis or Fascia).

Sarcoma.

Myxoma.

Inflammatory Swellings.

Compound Palmar Ganglion.

The first three conditions mentioned are the most probable. The rest of the conditions mentioned had to be excluded, on examination.

Forearm Swellings.

Diffuse Subcutaneous Lipomatosis, with localised angiomatous tissue.

Elephantiasis associated with a generalised

Molluscum fibrosum.

Angio Lipoma.

Lipoma

Haemangioma.

Inflammatory Swelling.

The first two conditions mentioned were both probable explanations of the local condition.

The condition of widespread Surface Nodules also presented some difficulty in diagnosis. In consistence the nodules resemble the larger tumours. They are of more recent origin. The condition appears to be a Neurofibromatosis. Certain nodules were said to break down and extrude a "core", and such conditions as Acne Vulgaris and Molluscum contagiosum have to be considered. Neither condition would give such a widespread crop of nodules, but might be present, in addition to the general condition.

Soft fibromata was considered a probable diagnosis. In a previous /

previous case, which I examined, a diagnosis of neurafibromatosis had been made. In comparing the two cases, in this previous case, the nodules were smaller, firmer, and some of these were painful. There was a marked neurological complaint, with general weakness, and a chest condition was superadded. In the present case, the nodules are invariably soft and painless, there is no nervous upset, though there may be a slight constitutional weakness present. Nodules in this condition are usually soft, though they vary in consistence. Moreover, larger swellings, on the limbs are often a manifestation of the disease. Nerve thickening which is said to be frequently present was not noted in this case. The general distribution, is typical of the disease, the back, chest, and trunk being considerably involved.

An alternative, though less likely, explanation was that the condition may be caused by a condition of multiple Lipomata. The nodules felt fatty, and in some cases, were pigmented and covered with hair. This may have accounted for the absence of nerve symptoms.

Other conditions which were excluded were sebaceous and parasitic cysts. Both would be unlikely to give so sudden, and so extensive a crop of nodules. The distribution and number of the nodules can rule out the possibility of Sebaceous Cysts. Parasitic cysts or cysticercosis is a possibility, and I have examined /

examined one such case (Ward 22) recently. The parasitic cysts cannot be seen, but are palpable in the deeper structures and firm. Cerebral symptoms may be present.

The uncertain nature of the nodules, and particularly of the hand and forearm swellings, called for local removal of the swellings, if only for diagnostic purposes. Findings at the time of operation were strongly in favour of fatty or fibro-fatty tumours. The skin nodule, on excision, was circular, well differentiated from the surrounding fatty tissue in which it lay, greyish-white in colour, and soft in consistence.

The forearm tumour, as suggested by the skin appearance showed, on exposure, sufficient vascular tissue as to indicate its being an angiolipoma. This however proved to be solely a venous varicosity around the tumour.

The hand swelling differed from the others in being fatty, but firmer in consistence, and suggested more of a fibro-fatty tissue. There were no vessels as in the forearm tumour. The tumours were not capsulated. That in the hand was adherent to the deeper structures, particularly the palmar fascia from which it appeared to originate. Thus, on naked-eye examination, all the tumours had a common fatty element, and there was no evidence of their being derived from Neural tissue. A diagnosis could /

could not be established without a histological examination of the excised structures. Regarding finger disability it had to be decided to what extent this was due to injury of the tendon of the M. Flexor Digitorum Profundus, or to the presence of a palmar lesion resulting from the increase in size of the palmar swelling. No tendon damage in the palm could be determined at the time of operation. Pulling on the tendon flexed the terminal phalanx.

The findings reported on the microscopic examination of the tumour and nodule were surprising, as they belied the macroscopic appearances.

Sections of the Nodule from the dorsum of the forearm showed this to be a small fibromatous tumour, probably Keloid in origin.

Sections from the forearm tumour showed masses of cellular fibroid tissue infiltrating the subcutaneous layers and encapsulating most of the existing structures, such as blood vessels, nerves, and sweat ducts. The condition would appear to be due to some form of Keloid Hyperplasia.

Sections from the Tumour mass of the hand showed masses of cellular fibroid tissue enveloping most of the existing structures such as Blood Vessels, Sweat Ducts, Nerves, and Nerve /

Nerve-endings. One or two Paccionian touch-corpuscles are included in the section, the nerves of which appeared to be replaced by Collagen fibrils. The condition would appear to be Keloid in nature. The hypothesis was said to be open to experimental investigation.

The tissues under consideration have been indicated diagrammatically, and discussed, elsewhere.

As further verification of the pathology was desired, a small pedunculated, pigmented nodule was excised from the back. On section, the tissue proved to be that of a Papillomatous tumour. (See Diagrams V 15 & 16.).

A typical nodule from the back was found to be composed of fibroblastic tissue similar to that of the forearm nodule and masses. No pigment was seen, though a small mass of naevus cells was present just beneath the overlying squamous epithelium. The nodule bore no recognisable relationship to any definite structure.

In reviewing the diagnosis, in the light of the findings on microscopic examination of the tissues concerned, it will be recognised that a straight-forward diagnosis cannot be made, owing to complication. Reports on the microscopic sections of the hand tumour indicate the tumour as being entirely of a fibrous nature - keloid. Strictly the term keloid has been reserved /

reserved for new growths of fibrous tissue arising on the site of previous scars. This keloid-like fibrous structure differs from ordinary fibrous tissue in that it is a hyperplasia enveloping all pre-existing tissue structures. While macroscopic investigation suggested a fatty element, the sections showed, curiously, that such an element was absent, and could not be responsible for the soft nature of the structures.

Again, the forearm tumour showed a considerable amount of keloid-like fibrous formation, described as a keloid hyperplasia. While the term 'Keloid' appears to take on a new form, this is evidence of an admixture of tissue, mainly fibrous, but also areas of fatty tissue which receive no mention in the pathology report. The appearances of both hand and forearm tumour masses suggested conditions which were not substantiated on microscopical investigation. Examination of the sections at least rules out - and the sections covered a wide area of tissue - any lipomatous element in the hand tumour, and also the angiomatous element in the forearm tumour. The apparent increased local vascularity and enlarged veins in the forearm was only in relation to the surface of the tumour mass, the actual tumour structure is not very vascular. Vascularity is not judged by the amount of blood seen in the tissues, for prolonged application of the tourniquet, and a preliminary emptying of blood from the limb by an elastic bandage /

bandage, gives a false impression, but is judged by the condition of the vascular network observed in sections of tumour tissue. The considerations of the Hand and Forearm tumours have been grouped conjointly since their duration and history suggested a similarity. The aetiology of the tumours is obscure. They have been present throughout life. No previous trauma or scar formation is known. The condition may, for want of other evidence, be considered as congenital; intra-uterine defect or injury in delivery may be suggested. There is no known hereditary factor, and family history is negative.

The Nodule from the dorsum of the forearm likewise proved to be of a Keloid nature. The history suggested that the nodules were a condition entirely apart from the pre-existing tumours, but the examination of the structures led to the opinion that both the nodules and tumours were really of the same type in formation and origin. This investigation did not prove the condition to be a neurofibromatosis, only indicating the presence of fibromatous hyperplasia. Pigmentation was thought to be due to small collections of naevus cells. This fibrous tissue was contrasted with sections of tissue known to be Lymphangioma and Fibroma. From Lymphangioma it differed in being less cellural, and less vascular. It resembled fibroma, but showed fewer cell nuclei, was less vascular, and showed the tendency to surround the few vessel branches /

branches within its substance. The overlying skin layers showed no abnormal change.

The examination of the Nodule from the Back showed that it was essentially the same as the forearm nodule-fibrous tissue and fibroblastic cells. Again, fatty or angiomatous tissue was absent. A few naevus cells were seen, and the skin was regular and not pigmented. The tissue was mainly fibrous, and was said to bear no recognisable relationship to any definite structure. Such a report did not aid in diagnosis as to the actual condition.

Clinically the diagnosis had rested between the more probable Molluscum fibrosum, and the less probable multiple Subcutaneous Lipomatosis. The microscopic examination at least excluded the latter, while not proving the former. In favour of Lipomatosis was the physical examination of tumours and nodules, and the fact that pigmentation, naevi, pigmented moles, and papillomata often accompany the condition.^{1.} Also, the hand and forearm tumours resembled fatty elephantiasis. In favour of the Molluscum fibrosum was the slow gradual spread of the nodules, the distribution of painless nodules, and the relationship between nodules and tumours of the forearm and hand. The condition was not wholly typical of the disease.

Outstanding /

1. Hellier. F.F. "Hereditary influence in Multiple Lipomata".
Lancet. (1) 1935. p. 204.

Outstanding points arrived at in the investigation were:

While the hand and forearm tumours preceded the onset of the skin nodules, all these swellings contained, to a varying degree, an unusual fibrous element.

Lipomatous or angiomatous tissue structure was present in certain of the tumours and nodules, but to a lesser degree than naked eye appearances, or physical examination, would suggest.

The swellings, soft and non-capsulated, almost suggesting the presence of contained fluid, were composed almost wholly of soft fibrous tissue, which histologically resembled Keloid hyperplastic tissue.

The condition cannot be said to conform typically to any classified disease.

There is probably little connection between the finger injury and the increase of the palmar swelling to twice its former size, as has been described by the patient.

Prognosis:

Immediate prognosis as to life is favourable at the same time, the general condition may progress, nervous symptoms are liable to develop and the general health may not be of the best. There may be slow but progressive muscular weakness. With regard to the hand, and forearm, while the tumours /

tumours may recur, the recurrence will be slow, owing to the benign nature of the original tumours. The exception would be met in the form of sarcomatous change. There is weakness of the hand of the affected limb, and this will be a permanent feature, as it has shown signs of limited recovery only.

Further operation on the Nodules or Tumours is strongly contra-indicated, especially if there is an element of true Keloid present. While the end result is not as favourable as may be desired, the original tumours may have led to further weakness of the hand, and the hand can still be used in certain types of work. At present there is some vasomotor disturbance of the hand, and the weakness is of muscles with nerve supplies from both Median and Ulnar Nerves.

There is sufficient clinical evidence for assuming this case to be a Neurofibromatosis, which itself has been placed in a sub-class of the Neuromata, and has therefore to be differentiated from other types of Neuromata. The condition is termed a false Neuroma, and other such types had to be excluded. Of these innocent tumours, such as fibroma or Myxoma were excluded, largely because they are usually solitary. The same applies to Sarcoma, whether spindle-celled, fibrosarcoma, or myxosarcoma, or a form of cystic degeneration.

There was sufficient ground for excluding trauma as the cause /

cause - ruling out Neuroma of traumatic origin - owing to the multiplicity of Lesions present.

The neuromata of Leprosy, specific disease, and tuberculosis were ruled out owing to failure to demonstrate positive physical signs. Such skin conditions as Syphilide, Lichen, Oblusus, Lichen, Tubereux, or Eumeurs Angiomateuse, while resembling certain of the individual nodules could not account for the whole of the pathology present.

The condition is diffuse, and therefore is more likely to be a fibromatosis, and this explains several features present. The nodules are probably cutaneous Neurofibromata, and the hand swellings elephantiasis neuromatosa, while the pigmentation of the skin may be of nerve origin. Molluscum fibrosum is a condition, the Nerve origin of which was demonstrated by von Reckinghausen in 1882, and is a fibromatosis of the terminal filaments of the cutaneous nerves, frequently associated in the same individual with connective Tissue overgrowth of the trunks of Nerves.¹ While sections were stained with Haematoxylin and Eosin, and others by Van Geison's staining method, no sections were stained by the Weigert-Pal method, and nerve structure was not demonstrated. Collagen replacement of Nerve fibres have been noted.

Typically, /

i. Thomson, A. "On Neuroma and Neurofibromatosis".
1900. p. 54.

Typically, neurofibromatosis is met with in young adults, and is often associated with mental or physically deficiency. It is frequently hereditary, and may be congenital in origin. Pigmented moles are associated with the condition in 25% of cases. ¹. Growth arises from the endoneurium, but unless the nerve roots are involved the motor and sensory changes are slight, although pressure on individual nodules may cause pain. The disease is usually slowly progressive, and operative treatment is usually called for when nodules give rise to pain. This case showed little general nervous upset, there was no pain, and the main disturbance was caused by the hand and forearm tumours. Pachydermatocele, if localised, lends itself to excision.

Keloid tissue is akin to neurofibromatous tissue. It has been described as a peculiar form of fibrous new growth, which, like other fibrous tumours is subject to fatty or myxomatous degeneration. ². It may occur spontaneously, and may be due to sepsis, although its aetiology is unknown. ³. There seems little evidence to support the supposition that the Keloid represents, in this case, a degeneration of a neurofibromatous growth. Keloid never becomes malignant, ⁴. and /

1. Chiene. G.L. Handbook of Surgery. p.263.

2. Spencer & Gask. The Practice of Surgery.
"Connective Tissue Tumours." p. 115.

3. Chiene. G.L. Handbook of Surgery. p.248.

4. Bailey. H. & McNeill Love. R.J.
"Short Practice of Surgery." p. 44.

and any recurrence might be effectually treated by deep X-Ray Therapy. Fibrolysin has no place in the treatment.

X-Ray examination revealed a rarefaction of bone which may be associated with prolonged malnutrition, or disease, with Calcium or Parathyroid Metabolism upset, or may be associated with Polycystic disease of the Kidneys.

In the operative procedure, there was some justification for the use of a tourniquet owing to the uncertain nature of the tumours, and the possibility of their being angiomatous. At the same time there can be little doubt that the prolonged use of a tourniquet during a long operation, while securing a bloodless field at the time, led to a period of post-operative bleeding, swelling and discomfort, and while "blood clot is the bond of union" the amount of clot was excessive. The use of the tourniquet has its advantages and disadvantages, but the optimum result may be obtained by intermittent or gradual slackening of the tourniquet, so that "bleeding points may be observed, and after they are ligatured, the tourniquet can be taken off".¹ It has been stated, rather dogmatically, that a limb must not be kept deprived of Blood for more than half an hour at a time,² and that the tourniquet should be relaxed at regular intervals to permit of fresh blood reaching the limb. Anoxaemia from prolonged use of the Tourniquet causes local /

1. Chiene. J. "The Elements of Surgery." P. 44
American Practitioner. 1879. p. 29.

2. Macewen. J.A.C. Text Book of Surgery. p. 8.

local anoxaemia, which results in capillary damage and out-pouring of fluid.

In reviewing the case, the most notable feature is the discrepancy between clinical and pathological findings.

Clinically the condition resembles most a neurofibromatosis, with several atypical features. The condition in different cases shows varying features. In a recent case (Mrs. Brown, Ward 28) the distribution of nodules resembled that in this case, but there were no large swellings, and pigmentation of nodules and skin was excessive. Case resembling this, with widespread distribution of nodules together with a large but localised Tumour are not unknown. For example, an unreported case was demonstrated (Royal Society of Medicine. Dr. C. Worster-Drought's Case. 8/12/29), in which there was a diffuse neurofibromatosis with a large Cervical Tumour. There is every reason for supposing that the hand and forearm tumours are part of the neurofibromatous condition. Histologically the tissue is atypical, and, if keloid in character, may recur but would be unlikely to assume malignant change. Preliminary biopsy would have been of service. The sections stained with appropriate nerve stains would have given valuable information for diagnostic purposes. The diagnosis was based not on the histology, or local physical examination of the swellings, but on a consideration of the course of the disease /

disease, and observation of the widespread disease process. The case serves to show the value of clinical observation as a means of estimating the underlying pathology in unusual or atypical manifestations of disease.

SUMMARY: A case of Neurofibromatosis is described. Clinical examination of local hand and forearm swellings led to a provisional diagnosis of Lipoma.

The hand and forearm swellings and nodules from various body regions were said to be composed of a Keloid-like tissue.

A diagnosis of generalised neurofibromatosis is made on clinical grounds.

-----oOo-----

1.
Patient's Name: Andrew Millar,
Address: 34, Elliot Place,
Hainsford, Falkirk, Stirlingshire.
Age: 71 yrs.
Occupation: Warehouseman.
Medical Attendant: Dr. Smith,
Falkirk.
Admitted - 23/1/35.
Examined - 23/1/35. C A S E VI.

Complaint: "A lump" ANDREW MILLAR. "which came about on
straining, and has remained down".

Patient's complaint, in his own words is of "a lump"
situated near the anal margin, and this he associates with
the symptoms which RECTAL CARCINOMA. the following Case-History.

Patient was a warehouseman, and has been in steady
and regular employment. He has been in good health until
two years ago, a time which marks the onset of the symptoms
of the present disease.

About two years ago, he began to be troubled with
discomfort and itching on the left side in the region of
the anus. The itching first affected the skin in proximity
to the anus and spread to the adjacent skin surface of the
anal cleft and the left buttock. The discomfort was
interfered with, by scratching, bled freely. The condition
persisted, and was progressive.

During/

Patient's Name: Andrew Millar.

Address: 34, Elliot Place,
Bainsford, Falkirk, Stirlingshire.

Age. 71 yrs.

Occupation: Warehouseman.

Medical Attendant: Dr. Smith,
Falkirk.

Admitted - 28/1/35.

Examined - 28/1/35.

Complaint: "A lump" - in anal region - "which came down on straining, and has remained down".

Patient's complaint, in his own words is of "a lump" situated near the anal margin, and this he associates with the symptoms which are related in the following Case-History.

Patient was a warehouseman, and has been in steady and regular employment. He has been in good health until two years ago, a time which marks the onset of the symptoms of the present disease.

About two years ago, he began to be troubled with discomfort and itching on the left side in the region of the anus. The itching first affected the skin in promimity to the anus and spread to the adjacent skin surface of the anal cleft and the left buttock. The integument on being interfered with, by scratching, bled freely. The condition persisted, and was progressive.

, During/

During the first six months the condition steadily worsened, and difficulty in defecation was experienced, since defecation tended to worsen the local condition. This state of affairs tended to constipation with resulting straining at stool, and a "lump" descended at first appearing only on straining, and finally remaining down. The act of defecation was accompanied by excessive pain, and purgatives had to be taken in order to secure a motion of the bowels. Borborygmi was not complained of.

The itching of the skin, in addition to the "lump" caused him to seek advice, and, on his doctor's recommendation, was admitted to the Falkirk Infirmary five months ago. The lump of which he complains appeared one month prior to his admission to the Falkirk hospital. (See Diagram).

In that institution, he received Radium Therapy, 8 needles being inserted locally. No anaesthetic was required. According to the patient's story, the needles were inserted by the anal route into the sides of the lowest part of the bowel - presumably into the wall of the Rectum. They were maintained in position for 4 days. Details of mg.m - hour dosage of Radium are not known by the patient.

On discharge from the Infirmary, after the local discomfort due to the insertion of the needles had subsided, he was free from his former symptoms. The itching of the skin/

skin ceased, the lump disappeared, there was little or no difficulty in defecation, and no pain. His general health and outlook improved. For one month he was fairly well generally, and symptom-free. At the end of this period there was again straining on defecation, gradual in onset, and with local aggravating factors; and as a result of this, the lump again descended, and remained down.

This ushered in a period of discomfort due to sudden return of the old symptoms. Difficulty in movement of the bowels was the prominent symptom. While there existed a condition of constipation in that motions were scanty in nature, yet the motions were of a fluid character purgatives being required to effect a motion of the bowels. The cause of the re-descent of the lump, patient thinks, was the straining that was unavoidable during and prior to defecation. There is no typical history of morning diarrhoea, as such; i.e., there was no urgent call to stool on rising in the morning. The motions were fluid but could not be described as slimy. His appetite suffered considerably, the diet was modified and reduced in amount; less solid foods were, as it was thought that these tended to make defecation more difficult and painful. Recently food has been restricted to fluids and soft foods, e.g., milk, puddings, soups, etc. any heavier foods being found to worsen the symptoms. There has been no vomiting.

The/

The constipation and difficulty in passing motions has become severe recently, and the pain on defecation has increased. A slight frank bleeding from the bowel has been noted on one or two occasions. He attributed his symptoms to "piles".

Fifteen months ago, before treatment was sought for, at a time when there was some difficulty in defecation, accompanied by straining, a lump appeared in either groin. There is now present a condition of bilateral Indirect Inguinal Hernia. His occupation did not involve undue physical strain, e.g., no lifting of heavy objects. There is no known history of "Rupture" in childhood. The assigned cause of the herniae is the straining at stool.

There have been no urinary symptoms at any time. No frequency of micturition. No nocturia. No difficulty in commencing the act of micturition.

There is no history of Sciatica nor of any pelvic or lower limb pain.

Recently he has had a cough resulting from a "cold", but previously has been free from coughs. Over a period of 2 years he has become gradually "run-down", and has lost weight. Towards the end of Dec. '34 his weight was 8 st. $13\frac{1}{4}$ lbs. At the end of January '35 the weight was 8 st. 9 lbs. - a loss of $4\frac{1}{4}$ lbs. in one month. No previous weights/

weights are known, but he realises that he has lost weight slowly over a period of two years. This has been noted by other people.

The family history, regarding colonic or Rectal disorders is negative. He has several brothers and sisters older than himself and all are in good health.

His own history has been almost free from previous illness, except when, 35 years ago, he suffered for two months from Rheumatism, the pains affecting mainly the lower limb joints. He has not been affected with the Rheumatic-condition since that time.

On examination, the patient has an obviously cachectic appearance. He is somewhat restless, anxious, nervous, and apprehensive.

The face is slightly flushed, and shows the cachectic state. There is a degree of anaemia evident in the skin, but more so in the mucous aspect of the lips and buccal mucous membrane generally. There is a suggestion of a yellowish tinge in the facial skin. The face is thinned from loss of fatty tissue so that the malar bones are prominent and the cheeks hollowed out. There is a well-marked Arcus Senilis of both Corneae. There is an effortless wrinkling of the skin of the forehead, and a puffiness of the skin below the lower eyelids.

Alimentary/

Alimentary System.

The teeth are natural and several, particularly on the lower jaw, are carious. The tongue is white-furred, but moist.

On abdominal inspection, the Anterior Abdominal wall shows evidence of considerable loss of flesh. The fatty subcutaneous layer is ill-developed. The skin is loose, dry, and there are well-marked Transverse Striae in the skin across the lower abdomen - further evidence of loss of flesh. The abdomen is flat and shows no obvious distension.

There is little, in the way of positive signs, to be elicited on palpation. The muscular covering is wasted, and the muscles are of poor tone. There is no muscular rigidity, and the abdomen is soft to the feel.

Percussion gives a general tympanitic note, and reveals no bladder distension.

Examination - inspection, percussion and palpation - in the Liver Region showed that there was no enlargement of the liver, no irregularity of the liver margin. The liver substance was not palpably nodular.

Examination of Right Inguinal Regions.

There is a rounded swelling in the R. Inguinal Region, about/

about the size of a tangerine orange. It is soft, it gives an impulse on coughing. It can be reduced. The swelling is probably an enterocele occupying the R. Inguinal Canal and protruding at the External Ring. The examining finger encounters canal content on entering the external Ring. The condition is that of Indirect Reducible Inguinal Hernia, caused probably by strain on the atonic abdominal muscles and increased abdominal pressure, due to the straining associated with chronic bowel obstruction.

The Left Inguinal Region shows another swelling, smaller and less rounded than that on the Right side. (see Diagram). It gives an impulse on coughing, and is reducible. It protrudes at the external Ring and lies in the line of the Inguinal Canal. It is a Left-sided Indirect Inguinal Hernia with, probably, a similar aetiology and pathology as that on the Right Side. The Herniae have always been reducible, and have not given rise to other than local symptoms.

Rectal examination. There is excessive guarding of the anal sphincters, the tonicity of which has to be overcome. Immediately beyond the Internal Sphincter, and passing beyond the anal canal, the finger encounters a firm tumour. There is a swelling encircling the lumen of the lowest part of the Rectum, the greater bulk of the swelling being anterior in position./

position. The tumour is very hard to the touch, irregular rather than nodular, indurated, and fixed to surrounding structures. The examining finger could not get beyond the upper limit of the growth, nor could the prostate gland be palpated owing to the presence of the tumour. The examination caused considerable pain, the least interference causing the patient distress. Palpation of the tumour gave the greatest tenderness. On withdrawal, the finger was covered with foul-smelling mucoid material, and a trace of Blood.

Glands. Right Sublingual glands were palpated and found palpable, very hard, rounded, discreet, but small - pea-like. Those of the left sublingual area were also very hard, rounded, though not quite as enlarged as those of the Right.

Other gland sites were examined, particularly in the groin, the clavicular and cervical Regions but the result of this investigation was negative. The palpable inguinal glands were not tender on pressure. There was no visible lesion of any kind in the limbs to account for inguinal gland involvement.

Routine examination showed no abnormality relative to Skeletal or endocrine systems.

Urinary system. No urinary symptoms of any kind.

Examination/

Examination of Urine. (Pre-operation specimen).

Colour: Amber. Specific Gravity: 1020.

Reaction to Litmus: Acid.

Deposit: Slight mucus.

Albumin. (Heller). Negative.

Sugar: (Fehling's) Negative.

Blood: (Guaiac): Negative.

Pus (Liquor Potassae, and microscopic): Negative.

Cardionascular System. No Symptoms.

All cardiac sounds closed and pure with the exception of the first sound which is muffled, and of a blowing nature in the Apex region only - a mitral systolic murmur. There is no marked Cardiac enlargement.

Pulse. 80.

Systolic 180.

Blood Pressure

Diastolic 90.

(By pulse and auscultation methods)

There was nothing of note in the examination of the Respiratory System. Breath sounds were vesicular in type.

Haemopoietic System.

Haemoglobin 60%.

Red Blood-cell count was not carried out.

On admission: T. 98°. P. 80. R. 20.

Bowel Action. Bowels moved 4 times on morning after admission./

admission. Castor oil had been given the previous evening. The motions were fluid and contained some mucus.

Physical examination and details of case-history were done with as little upset to the patient and as as quickly as possible, as he showed signs of fatigue and distress following the journey to hospital. He was readily tired out, and was rather nervous and apprehensive of treatment to be carried out.

Pre-operative Treatment.

28/1/35. Evening of day of admission:

Castor oil. zvi.

Nembutal gr. iii. 8.50 p.m.

29/1/35. Day of operation.

H. I. Morphine gr. $\frac{1}{6}$ and

Hyoscine gr. $\frac{1}{100}$. at 11 a.m.

The purgative effected free motion of the bowels on operation morning. No enema was given.

Operation I.

29/1/35. Anaesthetic: Ethyl Chloride induction, open Ether.

11.45 a.m. Duration 15 mins. Mr. Chiene.

The purpose of this operation is to do the First Stage of an Inguinal Colostomy. It consists essentially of bringing a portion of Colon to the surface of the abdomen, and maintaining it in that position.

The incision. (See Diagram) was made in the L. Inguinal Region/

Region above Roupart's Ligament. An incision between 2 and 3 inches in length was employed in a line corresponding to the direction of the fibres of the M. External Oblique. The incision was muscle-splitting corresponding to the gridiron incision on the R. side used in removal of the Vermiform appendix. The incision was uniformly deep, and was made through skin, fatty and fibrous tissue, and exposed the External oblique muscle. The diagrams indicate the site and direction of the incision, and show the incision of superficial structures and the exposure of the Ext. oblique muscle.

The External oblique was split in the direction of its fibres, thus giving access to the fibres of the underlying Internal oblique muscle, directed downwards and laterally. The edges of the External oblique were retracted, and the Internal oblique was split in the direction of the axis of its component fibres. The Transversalis fascia, the Transversus muscle, and the Parietal Peritoneum were incised. The edges of these structures were retracted and coils of small intestine were presenting in the wound. These were pushed aside and the Colon was felt for, and a mobile portion of the Colon was brought to the surface.

Having delivered a portion of Colon, this had to be fixed outwith the abdomen. This was done, in the first-place, /

place, by incising the meso-colon, and passing through this structure a Madyl's Glass Rod. This prevents the bowel from slipping back into the abdominal Cavity. The bowel was anchored at the extremities of the wound, to the skin edges, by Silk Sutures. Any bleeding points in the cut tissues were secured with artery forceps and tied off with catgut sutures.

Yet another method of bowel fixation was employed by approximating the cut edges of peritoneum and muscle within the loop of Bowel. This also served to produce a spur, which further caused separation of the lumen of the two limbs of the loop. There was thus a living tissue barrier, and an artificial barrier - in the form of the Madyl's Rod between the two limbs of the bowel loop. This completed the first operation - a first stage of an Inguinal Colostomy.

The exposed bowel was surrounded by swabs soaked in oil of vaseline. These were covered by a square of Lister's perforated oiled silk or "green protective". Dry gauze swabs covered over the oiled silk, and the whole was covered with a pad of cotton wool, and a many-tailed bandage was applied, and the patient was returned to bed.

Post-operative Treatment, and Progress.

29/1/35. H.I. Heroin gr. $\frac{1}{12}$ at 10.50 p.m.

30/1/35. Increase in Temperature, Pulse and Respirations.
H.I. Heroin. gr. $\frac{1}{12}$. at 10.5 p.m.

Liquid/

Liquid Paraffin was given to maintain a loose condition of the bowels. There was some discomfort and gaseous distension of the abdomen.

31/1/35. H.I. Citressin 0.5.cc. at 10.35 a.m. for relief of distension.

H.I. Heroin gr. $\frac{1}{12}$ at 12.5 p.m.

Part dressed. Oil of Vaseline and swabs applied.

1/2/35. H.I. Heroin gr. $\frac{1}{12}$ at 11 a.m. - as preoperative medication. On the third day following the First Stage Colostomy, a Second Stage was considered in the operative treatment with a view to opening the hoop of Bowel, to allow of escape of gut contents through a colostomy opening.

No atropine was given.

Operation II.

Opening of Colostomy. Mr. Chiene.

No anaesthetic.

1/2/35. 12.50 p.m. Duration 10 mins.

The part was exposed by careful removal of the dressing material. The skin of the area was sterilised by application of spirit.

A Payrs Crushing Clamp was applied to the Bowel at the apex of the hoop. On its removal the crushed bowel was completely divided with scissors. The Madyl's glass Rod was removed, /

removed, and a swab inserted between the two limbs of the bowel hoop. Bleeding points on the cut edge of the lower Bowel Segment were secured with Artery forceps, and tied off. (See Diagram).

The upper bowel segment was held by the fingers, and a Rubber Catheter was pushed into the crushed edge, but did not successfully open up the gut. A Chiene's Metal Bougie was inserted, and this served to dilate up the lumen of the upper portion of the divided Colon. Having opened the Bowel lumen, a form of bowel drainage was instituted.

A strong silk suture was inserted encircling the opening of the proximal part of the bowel. A Paul's glass Tube was inserted into the lumen, and the suture was then tightened and tied, holding the tube firmly in position.

No attempt was made to close the lumen of the lower portion of bowel. It was left as it was, and a Second Paul's Tube was not required. The part was again covered with gauze swabs soaked in oil of vaseline, and cotton-wool pads were applied and fixed in position by an abdominal Binder.

Post-operative Treatment and Progress.

On return to bed, a long thin rubber drainage Tube was connected to the Paul's Tube and led to a bottle at the side of the bed.

There was no reaction following operative interference.

1/2/35/

1/2/35. Castor oil and olive oil given, following operation.

The exposed bowel was dressed daily with swabs and oil of Vaseline.

4/2/35. The Paul's Tube came away from the Colostomy opening - on the 3rd Day.

Triple Tablets (Aspirin gr. $2\frac{1}{2}$. Phenacetin gr. 2. and Caffeine gr. $\frac{1}{2}$) gr. X at 12.40 a.m.

A slight cough proved to be a troublesome feature, causing straining of abdominal muscles, and giving rise to low abdominal pain. This causes some loss of sleep at night.

Post-operative specimens of urine showed no abnormal constituents. Tested from day to day, a typical result is as follows: S.G. 1025. Amber colour.

Slight mucus deposit. No Albumin, Sugar, or Pus.

Temperature, Pulse, etc. within normal limits. Following the second stage of the operation, patient had obtained great relief from the opening of the Bowel which had obviated obstruction and distension. He was now able to eat a fairly full and varied diet without the anxiety of resulting distension and excessive pain in the passage of a motion.

The following table gives a record of daily observations of Pulse, Temperature and Respiration at all stages of treatment. The evening readings have been utilised.

Date.	Day	T. ^o	P.	R.	
Jan. '35.					
28.	0	97	76	20.	
29.	1	98	98	22	Operation I.
30.	2	99	<u>96</u>	22	
31.	3	98	<u>90</u>	20	
Feb.					
1.	4	98	<u>92</u>	20	Operation II.
2.	5	98.4	<u>92</u>	20	
3.	6	98	<u>90</u>	20	
4.	7	97.4	<u>96</u>	20	
5.	8	98.4	<u>94</u>	20	
6.	9	97.4	<u>92</u>	20	
7.	10	98.4	88	20	
8.	11	97	84	20	Operation III.
9.	12	97	86	20	
10.	13	97	80	20	
11.	14	97.4	96	20	
12.	15	97.4	<u>104</u>	20	
13.	16	97.2	92	20	

Motions/

Motions of the Bowels since Admission.

Jan. 28. 0. to maintain Castor oil. zvi. on admission.
 29. 4. Operation.
 30. 0. Liquid Paraffin to the
 Castor oil.
 Feb. 1. 1. Olive-oil enema. Operation.
 2. 1. (Colostomy route).
 3. 1. Cascara.
 4. 1. Liquid Paraffin.
 5. 2.
 6. 2 and 1 (Rectal Route).
 7. 3
 8. 4.
 9. 0.
 10. 0. Cascara.
 Liquid Paraffin.
 11. 3 and 1 (Rectal).
 12. 2
 13. 1. Discharged.

The number of Motions daily during the stay in hospital has been noted, as the number indicates how the colostomy is functioning, /

functioning, especially when it is known what purgatives are being taken. Purgatives were given freely, and liquid Paraffin was given to maintain a fluid consistence of the motions. It will be noted that frequent bowel motion was attained. On two occasions, following opening of the colostomy, there was a desire to pass material by way of the Rectal Route and on these occasions a little material, mainly mucus, was passed. There was no pain and no trace of blood was evident. Initially there was no control over the colostomy. The bowel emptied itself suddenly, sometimes during sleep.

It was decided at this stage to have a colostomy belt fitted, in order to enable the patient to be allowed up. He was measured for the belt, and while it was being made, a small operation was done to remove a portion of bowel from both the exposed ends, to remove and diminish the bulk of the exposed bowel and to trim the exposed part. This was done to allow of the bowel fitting into a colostomy cap and at the same time to leave space into which faecal material can pour and accumulate.

Operation III. Mr. Chiene.

8/1/35. 1.20 p.m. 5 minutes.

No pre-operative medication. No anaesthetic.

The oiled dressings were removed, and the ends of the bowel/

bowel exposed. The uppermost part of the proximal end, a portion of bowel pink in colour, was clamped with a Payr's crushing clamp, and the clamped tissue removed; the edges of bowel lumen were trimmed with scissors. Little bleeding occurred. (See Diagram).

The uppermost part of the lower segment was similarly clamped and a large portion of the gut wall, which was darker in colour and friable, was pulled off. Bleeding points were secured, but some in the depths of the soft wall tissue continued to bleed freely at the cut surface. Bleeding was controlled with difficulty.

An unusual feature accompanying the simple operative measure was the agonising pain and the distress suffered by the patient. He perspired freely and there was generalised muscular clonic spasm. He was given Brandy, as a stimulant, at the termination of the operation. The part was dressed as before, the only difference being that a very firm bandage was applied to control the possibility of haemorrhage. The bandage caused discomfort and was slackened 3 hours later. Bleeding continued for some time, and showed through the thickness of the dressings. There was no constitutional reaction. The bleeding necessitated the dressing being changed during the night.

Post/

Post-operative Treatment, & Progress.

8/2/35. Morphia gr. $\frac{1}{6}$ at 2 p.m.

There was local pain and discomfort throughout the day following the trimming of the colostomy. Slight headache was experienced at night.

Luminal gr. I at 10 p.m.

9/2/35. The part was dressed. Bleeding had ceased, and the part was clean. There was no motion of the bowel for two days.

11/2/35. Small fluid motion per Rectum, and a motion by Colostomy opening.

The skin round the part was cleansed with spirit, and dried; and a zinc oxide powder was applied. There was very slight redening of the skin around the colostomy opening.

A Colostomy Belt together with a Cap, was provided, and the type is shown in the diagrams. It consists essentially of a thick rubber cap, which is placed over the colostomy opening. The cap is roomy, to contain the ends of the colon, and to collect and contain discharged **faecal** material. The cap is such that it can be fitted and removed easily, and is of a washable material. The cap, when applied, is held in position by an adjustable abdominal belt, which has a circular hole through which the cap protrudes. Below the cap cotton wool is placed over the skin to prevent the lower end of the rubber/

rubber cap from rubbing against the skin of the groin, and also to prevent spread of faecal matter, if this should occur between the cap and the underlying skin.

At first the belt had to be altered to fit the patient better. Initially the belt gave some trouble by leakage of content, but this was overcome by adjusting the cap more firmly to the abdominal wall. The patient is becoming accustomed to the use of the apparatus, and it now causes him no discomfort. With the use of the cap, the patient was enabled to get up for a short period daily in the ward, and was fitted for return to his own home.

13/2/35. Discharged from hospital on 15th day after the first operation.

He has never reported back at the Ward, since discharge.

The last report on patient's condition, in March '36 is to the effect that the local condition is still spreading and pain in the Ischio-Rectal Region is being experienced.

CASE/

they are the cardinal signs. The question of "Piles" is being the whole cause of the symptoms is at once discredited when Rectal investigation is carried out.

The first prominent symptom in this case was local itching - Pruritis. This symptom may have been independent of/

Case Commentary.

The frequency of its incidence, its serious nature, and its high mortality are factors which render the subject of Carcinoma of the Rectum, as seen in this case, of unusual interest. In this commentary it is proposed not to discuss Rectal Carcinoma generally, but to consider the special features of the disease as demonstrated in this case. Hence the discussion deals mainly with the clinical features of the illness. The underlying pathology is approached only from the clinical aspect, and therefore the treatment of the Pathology must be limited in its scope, as no material for pathological examination, either from biopsy or from operative excision, was available.

Considering the stage which the disease had reached when the patient came into hospital, there was presented no difficulty in diagnosis. The history, at his age, was strongly suggestive of carcinoma. The anomaly of constipation and diarrhoea, signs of chronic obstruction, and pain and discomfort in the late stages point to the condition of which they are the cardinal signs. The question of "Piles" as being the whole cause of the symptoms is at once discredited when Rectal investigation is carried out.

The first prominent symptom in this case was local itching - Pruritis. This symptom may have been independent of/

of the Rectal disease, although rectal disease often predisposes to pruritis. Other causes of Pruritis Ani are haemorrhoids, thread worms, eczema, diabetes and gout and these conditions have to be excluded. There is a more intractible form due possibly to a change in the sensory nerves, but while at first is intermittent becomes constant and intolerable. In this case the pruritis while being severe at first cleared up when Radium Therapy was given for the Rectal Tumour. It requires no further treatment.

The lump which was said to have descended to the Anus, and remained in position there was not caused by haemorrhoids, but was more probably a villous papilloma of the anal margin, and had to be distinguished from haemorrhoids and from epithelioma.

Regarding the major condition, several conditions had to be excluded. In a bowel disturbance, especially in obstructions, strangulation of bowel in a hernial sac has to be thought of. The bilateral indirect Inguinal Herniae, which probably had their origin in the weakness and atrophy of the abdominal muscles, together with straining from chronic bowel obstruction, were not tender, and were both reducible.

Of Rectal conditions to be considered, tuberculosis in/

in the form of Rectal ulceration would simulate this case, but would give less obstructive symptoms, and this condition is not uncommon. Other rectal ulcerations need not be considered. Colitis and diverticulitis as a result of diverticulosis can be ruled out on examination. Rarer tumours such as Lipoma and Myoma ¹. have been described, but would vary in their local character from the more usual carcinoma, although symptoms may be similar in these cases. The tumour was not a polyp, nor was the condition a simple Rectal Stricture. The tumour was primarily of the Rectal Wall, and not secondary to malignant disease of any neighbouring structure.

The diagnosis having been established, the treatment is partly governed by the patient's attitude to the situation. The patient had the possibilities of treatment, and the prospect of recovery outlined to him, although the term 'cancer' was never applied to the disease. The almost certain failure of a radical excision operation, and the more favourable outlook if a palliative colostomy was done, was explained to the patient. In all cases the colostomy is of value, whether a radical operation is to be carried out or not, not merely for relief of obstructive symptoms, /

1. Hartmann, Bertrand-Fontaine, and P. Guérin.
"Case of Myoma Recti".
Journ. de Chirurg. 1933. xliii.

symptoms, but so as to give a true estimate of the Rectal condition when the tumour settles down, after freedom from irritation and infection by bowel content. The mental outlook of the patient was at first none too good, he being nervous, and apprehensive of operation, but he became reconciled to the fact that the post-operative colostomy arrangement would be preferable to the present painful condition.

Ethical considerations arise in such a case where a radical, rather than a palliative, course of treatment may be carried out. It has been said that the surgeon has every reason to reproach himself if, for the sake of his own fair record, he withholds from doomed men and women their frail chance of life, and that he need not reproach himself for his surgical mortality when he gives them the chance. Without surgery in this case the result will be fatal in course of time. There is a natural tendency, in a case of this kind, to risk more drastic methods of treatment. Theoretically, removal of this tumour growth might give rise to cure, but such treatment was not attempted, on reasonable grounds.

In every case in which this issue presents, two factors have to be considered, viz the character of the Neoplasm, and/

and the general condition and resistive power of the patient. Points to be considered in the neoplastic growth, are the duration, the site, the extent, the type, and the amount of secondary involvement. Four usual types of Carcinoma of the Rectum are described - the Colloid, the Papillomatons, the ulcerating, and the scirrhus. Of these this tumour is probably a scirrhus, being hard, raised, and causing rectal stricture. Galen aptly described scirrhus as a tumour of the body, hard, grievous and immobile. This tumour is of long standing. The symptoms are of at least 2 years duration, and the growth has probably been present for a still longer period. A growth of this duration is likely to have a direct spread into surrounding tissues. There is no direct evidence of distant spread in this case. The liver, as far as can be detected is not nodular, the bladder, prostate, and urethra have apparently escaped involvement, there being no urinary symptoms of any kind. The most undesirable feature is the induration, and firm fixation to surrounding structures, which means undoubted spread beyond the Rectal wall, and this is the point which strongly decides against Radical operation.

The Lymphatic spread is of the utmost importance, from the point of view of operability. Roughly, Rectal adenocarcinoma might spread by direct extension by continuity of

of tissue, or by Lymphatic spread via the intramural, the intermediary, and the extramural lymphatic gland groups. Of these, spread by the extra-mural route is of much more greater consequence than any other ². Hence the important significance of fixation of the tumour. Spread by these gland groups is a reasonable hypothesis, it being agreed that the original pathology is to be found in the blockage of the crypt of a Leiberkuhn's gland. Similarly, a carcinoma arising from physiological cell propulsion ³ starts in the mucosal wall. An ulceration results owing to local vascular disturbance, and deep spread occurs into the structure of the wall.

Small hard Subinguinal Glands were palpated in this case, but these may have no relation to the tumours, unless downgrowth into the perianal region had occurred from the original site. There are numerous classifications of lymphatic spread in this disease. The spread may be considered in three zones, the upward, the lateral, and the downward. ⁴ The downward is to the Perianal skin, the ischo-/

2. Miles. W.E.

"The Spread of Cancer of the Rectum".
Lancet. 1925. (1) p. 1219.

3. Bailey. H., and McNeill Love. R.J.

"A Short Practice of Surgery". p. 42.

4. Miles. W.E. Lancet. 1925. (1) p. 1219.

ischo-rectal flat, and the External Sphincter muscle by a free intercommunicating lymphatic network. This may explain certain anal symptoms in this case. The lateral spread is to the lymphatic Network between the Levatores Ani and the Pelvic fascia, and involves such organs as bladder and prostate. No such spread was demonstrated in this case. The upwards zone of spread is to the Retro-Rectal glands, the Paracolic Glands, the left Common Iliac glands, and to the Aortic Glands, this being the commonest course of spread from the intramural lymphatic system of the Rectum. This is said to be the route most constantly and early by which spread occurs. The possibility of such spread in the case under review is certain, and the spread is wide - to glands and surrounding tissues, especially in the pelvic mesocolon. Pathology teaches us that the lymphatics may be the seat of metastatic spread even when the growth in the Rectum is in a clinically early stage, a fact which necessitates widespread tissue removal if operation is planned, and which indicates that operation is likely to be of little service in this case.

A more recent scheme of classification recognises 3 sites of tumour origin, the Anal Canal; from the Anal Canal to the 3rd Rectal Valve; and from the Valve to the Pelvic-Rectal Junction. This tumour would occupy partly the first/

first two sites, and spread would thus be to the inguinal glands, and to the External and Internal Iliac glands. In terms of symptoms, spread is recognised when the following structures are involved: The anal sphincters, the Bladder, prostate and Seminal Vesicles, the periurethral musculature, and the Sacral Nerve Plexus. Such symptoms were absent in this case.

Apart from Tumour spread, the patient's general health and resistance did not favour a major operation. A cardiac lesion was demonstrated, probably rheumatic in origin, though compensation was good. The Blood Pressure was not unduly raised, nor is the Radial Artery thickened. Respiratory function is normal, and the urine showed no abnormal constituent. Despite this long standing illness and loss of appetite has caused progressive weakness. He is asthenic and anaemic. A Red-Cell count was not carried out, but the Haemoglobin index was 60, there often being a disproportionate reduction of Hb. in the cells in this disease. The nervous system was unstable, there being evidence of anxiety, restlessness which would favour psychic shock. The patient was not a fit subject for the Radical operation.

The risk of operative treatment lies not in the operation alone, but in the prolonged post-operative course. Vascular system/

system mishaps are liable to occur. Sepsis, haemorrhage, and surgical shock are reflected in the cardiac function. Pulmonary complications ensue only too readily. Acute Retention of Urine sometimes occurs. Parotitis as a complication is not infrequent. Inguinal colostomy remains the one operation suitable in this case. The Abdomino-Perineal method of Resection, or the Perineal method - with a lesser mortality rate would not be justified in this case. The many-stage Kraske method - as is still employed - or the modern sacral Approach ⁵ are unsuited to this case.

The utility of Radium Therapy is limited in such a case as this, though it had produced temporary relief from symptoms. After colostomy it serves to check the growth and might be considered in this case. Its scope is possibly greatest after local excision.

Patient's Occupation has no bearing on the disease, and the family history was negative.

Symptoms were in accordance with the pathology. Flatulent distension, borborygmi, and straining at stool are all typical features. The increasing pain is probably to infection and spread to surrounding structures. Typically, until a late stage, the condition is painless. The patient is susceptible to pain, and this was noted during the trimming of/

5. Goetze, O. Zentralb. f. Chir. 1931. lviii. p. 1746.

of the colostomy - a procedure which caused him great discomfort. Hilton's work in 1860 showed that the intestinal wall was insensitive. Recent work ⁶ suggests that the bowel is insensitive to trauma pain as the Receptors which are acted upon by the specific "pain-producing substance" are absent in the bowel wall. Pain in trimming the Colostomy may be due to vascular damage, to pull on the Pelvic mesocolon, and to nervous apprehension on the part of the patient.

In Treatment the hernial conditions require no surgical interference under the present circumstances.

The question of a one - or a two-stage Colostomy is of some import. The two-stage operation was preferred, as there was no urgent need for the bowel to be opened. The first stage allows of the formation of natural adhesions whereby the peritoneal cavity is walled off. The necessity of preparing the patient with streptococcal sera, B. Coli Vaccine, or Nucleic acid is dispensed with. Mayo claims that there is less chance of gangrene of the bowel wall in the 2-stage operation.

The multiple methods of fixation held the bowel securely in position, and separated the limbs of bowel. As there was no doubt as to which was the proximal loop, one Paul's Tube/

6. Waterston. D. "The Mechanism of Pain"

B. M. J. 1934 (2) p. 1088.

Tube only was required. The tube is of use in keeping the raw edges unsoiled in the first few days after opening the bowel. Inguinal is still preferable to Transverse Colostomy as a permanent measure.

Non-operative Treatment was directed to giving the patient rest, and to obtain a regular soft motion of the bowels. In addition to strong purgatives, liquid paraffin was given daily, though this should not be advised over long periods, as it leads to irregular bowel action, and also interferes with bowel content absorption.

The part was cleaned and dressed daily. Light general diet was instituted at once. Fluids were given freely. It has been estimated that in a hospital patient in bed the fluid loss daily is represented by "Bowel fluid and Total urinary output daily + 2 litres", the last item representing loss by the lungs and the skin. Fluids in all cases should be advised, more especially in this type of case.

There were no ill effects from the colostomy, although such an operation is not devoid of risk. Bowel and urinary tract obstructions sometimes occur. General health improved, and the complexion cleared. The mental attitude was brighter, and there was prospect of continued relief from pain. This however was not permanent.

Future/

"Intraspinal Injection of Alcohol for Intractable pain".

Lancet. 1936 (1) p. 594.

Future care and treatment have to be considered. Patient should be able to get about again, but should avoid physical work. Attention should be paid to the bowels, and to keeping the colostomy opening clean.

There is little scope for excision or further use of interstitial Radium in this case. "It is better not to treat those who have deep seated cancers; for those who are treated quickly perish, those who are not treated last a long time" ⁷.

Ultimate Prognosis is grave, though the colostomy adds a period of comparative comfort. Further consideration is concerned not with the growth but with means of easing the returning ischio-Rectal pain. This type of pain is severe and constant, and sedatives are unsuitable. Lumbar sympathectomy and Pre-sacral Neurectomy have been employed in such cases. Recently some success in such cases has accrued from the intraspinal injection of alcohol, ⁸ and it may be that such a procedure may be preferable to operation though neither is without risk. Such a method may be worthy of trial in this case.

In reviewing this Case several points may be emphasised regarding this disease. This type of case is all too frequent./

7. Hippocrates. Aphorisms. VI. 38

8. Russell. W.R.

"Intraspinal Injection of Alcohol for Intractible pain".

Lancet. 1936 (1) p. 595.

frequent. Carcinoma stands third in importance as a cause of death, being preceded only by chronic cardiac disease, and Bronchitis. In Scotland, 1923, there were 6376 deaths from Carcinoma, of which 2772 were males. Of these 252 died from Rectal Carcinoma, this site being exceeded in frequency only by the stomach and remainder of the intestine. (Registrar General's Report, 1923). The incidence is high in males in this country.

The case is in keeping with certain impressions of the disease, viz., that it is liable to affect those who throughout life have been healthy, and that members of long-lived families are liable to the disease.

Treatment is unsatisfactory, and offers no cure. The case record takes into account but a short phase of the disease. The aetiology and course of the disease cannot be ascertained. Rectal Carcinoma is insidious and painless except in the later, and generally inoperable, stages.

Bleeding and anal discomfort, which is so often associated with haemorrhoids, may indicate an underlying malignant condition.

A gloved finger inserted into the Rectum clinches the diagnosis at once, and is a simple and reliable diagnostic procedure. A palpable Rectal Wall tumour is, more often than not, malignant.

If/

If Radical Excision is to be effected, the diagnosis must preferably be made before fixation occurs.

In inoperable cases, Colostomy is a valuable palliative asset, giving a reasonable period of relief from obstruction and pain.

A reduction in the mortality of the condition can be effected by the seeking of medical advice early, by early diagnosis, treatment, and observation. This case had gone beyond the hope of surgical cure. Earlier suspicion of disease, earlier examination, and earlier treatment could have added years of useful existence to a long lifetime.

SUMMARY. A Case of Carcinoma of the Rectum is described. The condition was inoperable, and treatment was by permanent Inguinal Colostomy.
